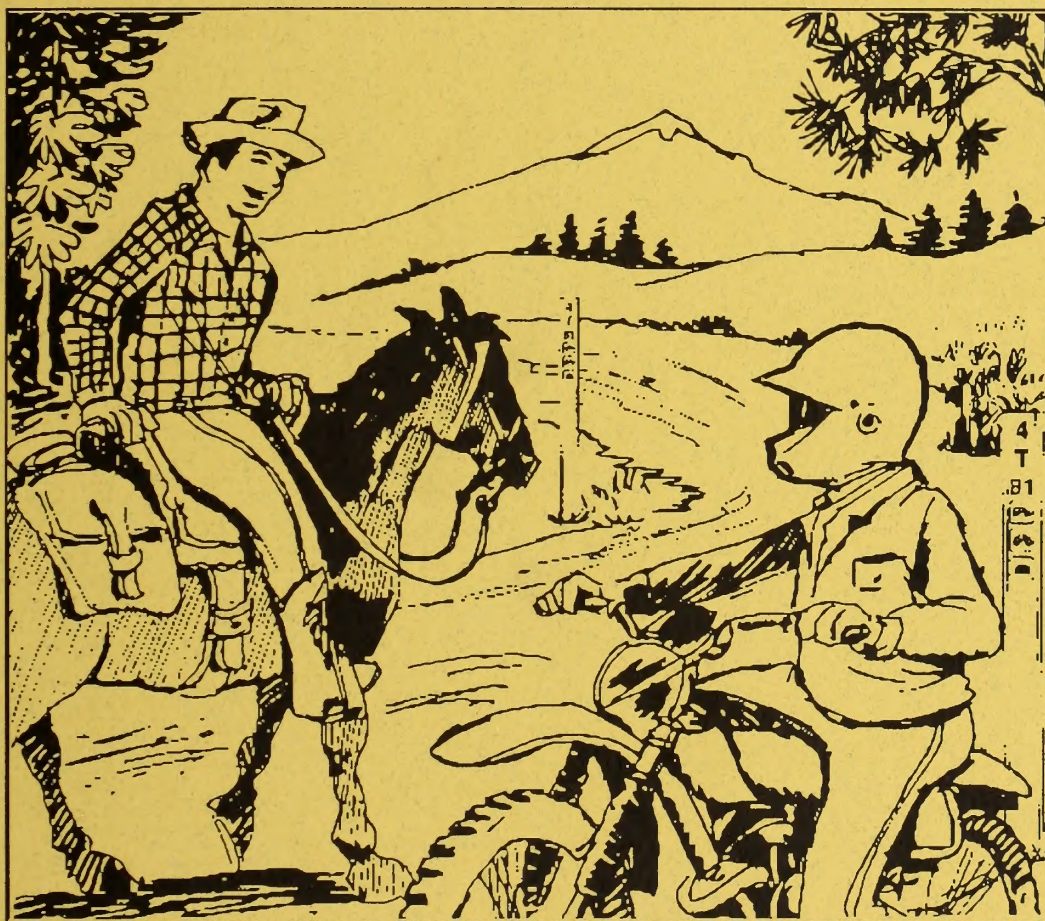




United States Department of the Interior
Bureau of Land Management
Redding Resource Area

December, 1996

Interlakes Special Recreation Management Area
Draft Plan and Environmental Impact Statement
with preliminary watershed analysis



Co-Lead Agencies:

Bureau of Reclamation, Northern California Area Office

U.S. Forest Service, Shasta-Trinity National Forest

National Park Service, Whiskeytown National Recreation Area

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Dear Reader:

Enclosed for your review is a DRAFT plan and Environmental Impact Statement (EIS) regarding potential management options on Federal lands within an area called the Interlakes Special Recreation Management Area (ISRMA). Although the ISRMA boundary encompasses lands under the jurisdiction of the Bureau of Land Management, Bureau of Reclamation, National Park Service and U.S. Forest Service, it should not be misinterpreted as an artificial boundary managed under a new level of bureaucracy. The ISRMA does represent, however, a complex region of intermingled Federal and private ownership that requires close coordination among Federal land managers and private landowners in order to provide planning and management consistency. Planning consistency improves cooperative management opportunities, fosters the sharing of human and fiscal resources, enhances wildlife and vegetation management, and benefits recreational users of Federal lands.

The DRAFT plan and EIS contains five management options for the region that were developed by an interagency, interdisciplinary planning team after consultation with many public agencies, private landowners, recreational users and interested citizens. Although a Preferred Alternative has been identified by Federal land managers, comments received on the DRAFT plan and EIS will be used to generate a Proposed Action which will be released within a FINAL plan and EIS. Readers should be aware that the ultimate authority for making decisions on Federal lands within the ISRMA, lies with the agency that has jurisdictional responsibility for those lands.

Private landowners within the ISRMA should understand that management options were formulated for the entire area regardless of ownership. Proposed management actions on private land are illustrated only so the reader will understand how that land would be managed if it was acquired from willing sellers by the Bureau of Land Management or cooperators. This plan will, however, foster cooperation among the private sector and public sector.

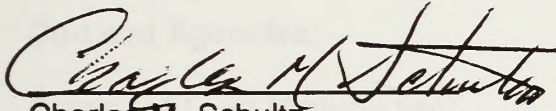
As required by law, this DRAFT plan and EIS is subject to a 30 day concurrent review by the Governor of California. Readers interested in commenting on this plan should do so within 45 days after the Environmental Protection Agency publishes the notice of availability for the DRAFT plan and EIS within the Federal Register. In addition to this formal comment period, a public meeting will be held to solicit input on the plan. To verify comment periods and public meeting dates, feel free to contact the Bureau of Land Management at (916)224-2100.

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Comments on this DRAFT plan may be sent to: Area Manager, Bureau of Land Management, 355 Hemsted Drive, Redding, CA 96002. Comments referring to management options on Federal lands not managed by the Bureau of Land Management will be forwarded to the appropriate agency with jurisdiction.

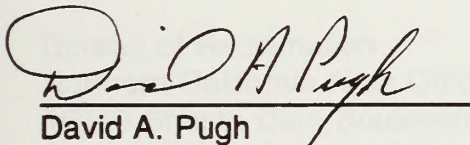
Thank you for your concern and interest in the management of lands within this unique region.

Sincerely,



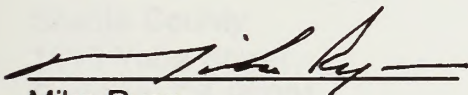
Charles M. Schultz

Area Manager, Bureau of Land Management - Redding Resource Area



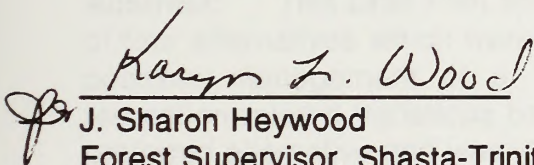
David A. Pugh

Superintendent, National Park Service - Whiskeytown National Recreation Area



Mike Ryan

Area Manager, Bureau of Reclamation - Northern California Area Office



J. Sharon Heywood

Forest Supervisor, Shasta-Trinity National Forests

**Interlakes Special Recreation Management Area
Draft Plan and Environmental Impact Statement
1996**

Location: Shasta County, California

Action: Draft Environmental Impact Statement

Co-Lead Agencies:

Bureau of Land Management
Redding Resource Area
355 Hemsted Drive
Redding, CA 96002

U.S. Forest Service
Shasta-Trinity National Forests
2400 Washington Avenue
Redding, CA 96002

Bureau of Reclamation
Northern California Area Office
16349 Shasta Dam Boulevard
Shasta, CA 96019

National Park Service
Whiskeytown National Recreation Area
P.O. Box 188
Whiskeytown, CA 96095

Cooperating Agencies:

Shasta County
1815 Yuba Street
Redding, CA 96001

California State Parks and Recreation
Off-Highway Motor Vehicle Recreation Division
P.O. Box 942896
Sacramento, CA 95296-0001

Abstract: This Draft Plan and Environmental Impact Statement documents the results of four alternatives which were developed by an interagency, interdisciplinary team for possible management of a 75,000 acre region. The alternatives offer unique recreation-related variations based upon issues within the area. Alternative D is the preferred alternative and was identified by a consensus recommendation of the co-lead agencies.

Once approved, the Interlakes plan will guide management activities for the Bureau of Land Management for the next 10 to 15 years. The U.S. Forest Service, National Park Service and Bureau of Reclamation may approve this plan by continuing with this joint planning effort and approving a Record of Decision, or may implement portions of this plan by tiering to this document within their own planning documents.

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Document Introduction

The author, David [Name], was born [Date] in [Location]. He is a [Profession] and has been working in the field of [Field] for [Number] years. He has a [Degree] from [University] and has published several papers in the field of [Field]. He is currently working on a project [Project Name] and is looking for [Type of Position] in the field of [Field].

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SUMMARY

Document Organization

The Interlakes Special Recreation Management Area (ISRMA) Draft Plan and Environmental Impact Statement proposes broad management direction to resolve issues on Federal and private lands within the ISRMA. The ISRMA encompasses lands under the jurisdiction of BLM, National Park Service, Forest Service, Bureau of Reclamation, and private landowners. Although management recommendations are proposed on lands under the jurisdiction of various agencies, the decision to implement those actions is entirely at the discretion of the respective Federal agencies. Furthermore, some management actions could only be implemented if private land was acquired from willing sellers within the ISRMA, or cooperative agreements were developed. The planning area and planning process is further described in CHAPTER 1, INTRODUCTION.

The ISRMA planning effort embraced coordinated resource management planning principles with Federal agencies attempting to resolve issues by defining consistent objectives and coordinated management actions. The plan focused on resolving issues that were identified by private landowners, Federal land managers, public agencies, and public land users. The issues related to recreation management, vegetation management, wildlife management, law enforcement, emergency response, hazard reduction, visual resources management, and road access and transportation. Because recreational uses of public lands within the ISRMA were very controversial, alternatives were developed around various recreation opportunity themes. The alternatives are further described within CHAPTER 2, ALTERNATIVES.

To adequately address planning issues and to properly gauge the consequences of future actions or authorizations, it was necessary to describe the natural and social environment of the ISRMA. Management actions proposed within the ISRMA plan could affect (or be affected by) land-use zoning, wildlife resources, fishery resources, special status plant and wildlife species, recreational resources, law enforcement, private landowner liabilities/trespass, surface hydrology, noise environment, acid mine drainage, air quality, vegetation, soil resources, and cultural resources. The affected environment is further described within CHAPTER 3, AFFECTED ENVIRONMENT.

The environmental consequences of implementing each land use alternative were analyzed by an interdisciplinary team of resource specialists. Resource specialists used *Foreseeable Development Scenarios* as assumptions for the level of development each alternative could cause. Some resource issues were not considered as impact topics and the rationale for excluding them from analysis was described. Other resource issues were fully analyzed and included: recreation opportunities, noise levels, motor vehicle traffic, air pollution, socio-cultural resources, private property, special status plant and wildlife species, soil resources, and the Whiskeytown deer herd. The environmental consequences are further described within CHAPTER 4, ENVIRONMENTAL

CONSEQUENCES.

Organizations, agencies and individuals provided the planning team with useful input into the planning process. Special care was taken to solicit input from public agencies, private landowners within the ISRMA, the public at large, and recreation user groups. Public agencies helped identify the issues the planning effort needed to resolve. Private landowners participated in planning workshops. The public at large was invited to a public meeting, and recreation user groups were given special consideration through an informal recreation advisory panel. The coordinated effort is further described within CHAPTER 5, CONSULTATION AND COORDINATION.

Management Alternatives

A synopsis of the most important management decisions and consequences of those decisions follow. The intent is to provide the reader with a summary understanding of the recommendations that this plan makes regarding long-term management within the ISRMA. Maps which portray these management alternatives are found in the packet accompanying this document.

No Action Alternative: The No Action Alternative is comprised of several existing plans which provide management direction for portions of the ISRMA. This alternative consists of land-use decisions which are based on jurisdictional boundaries, cooperative management ventures, and specific resource concerns. Land-use decisions detailed within some existing plans overlap with decisions depicted in other planning documents and, in some cases, may be contradictory.

Under this alternative, motorized dependent recreation would be emphasized within the Chappie-Shasta OHV Management Area, and waterbased recreation opportunities would be emphasized at Whiskeytown and Keswick reservoirs by maintaining or developing campgrounds, boat ramps and attendant facilities. Under this alternative, about 130 miles of existing road and trail would be available for all registered motor vehicles throughout the year and 70 miles of road and trails within the deer winter range would be closed to motor vehicles between October 15 to April 1 each year. Non-motorized trails would be provided along portions of Keswick Reservoir, but no new non-motorized trail development would be considered. An OHV staging area would be maintained below Shasta Dam, but no new access sites would be developed from the south to provide access into the Chappie-Shasta OHV Management Area.

Access into the Chappie-Shasta OHV Management Area from the east would be emphasized at the OHV staging area below Shasta Dam. East Fork Road, Cline Gulch Road, Grizzly Gulch Road and Merry Mountain Road would continue to be used by recreationists to access lands within the OHV Area and traffic on those roads (especially East Fork Road) would increase as private lands were acquired from willing sellers. Within the OHV Area, new loop trails would be developed, signed and maintained, but no new trail development would occur within the deer winter range.

Target shooting would be prohibited at most locations around Whiskeytown and Keswick reservoirs, but BLM lands adjacent to Keswick Reservoir would continue to be popular to target shooters. No formalized shooting areas would be developed, and unsafe target shooting would likely increase along Iron Mountain Road and Walker Mine Road as other lands were closed to target shooting.

Management of vegetation, visual resources, riparian areas and wildlife would continue under piecemeal planning efforts with little coordination across jurisdictional boundaries.

Alternative A: This alternative attempts to maximize relatively active opportunities for land and water based recreation activities. Opportunities for motorcycle and ATV recreation, and target shooting are expanded at the expense of recreational activities which may be incompatible. Opportunities for walking, hiking, horseback riding, bike riding, canoeing, sailing, hang gliding, paragliding, camping, and nature study are emphasized in regions which will not conflict with active recreation pursuits.

Under this alternative, motorized dependent recreation would be emphasized within the Chappie-Shasta OHV Management Area, while non-motorized recreation opportunities would be emphasized within the Sacramento River Greenway and Clear Creek Greenway. Waterbased recreation opportunities would continue to be emphasized at Whiskeytown and Keswick reservoirs by maintaining existing campgrounds, boat ramps and attendant facilities. Under this alternative, about 220 miles of existing road and trail would be available for all registered motor vehicles throughout the year. Non-motorized trails and staging areas would be developed connecting the Sacramento River Trail to Shasta Dam on the east margin of Keswick Reservoir.

A multiple-use, day use area and parking area would be developed at the Merry Mountain site providing access to existing non-motorized trails within the Whiskeytown Unit and new trails within the Clear Creek Greenway, and access for all registered motor vehicles into the OHV Area. An OHV staging area would be maintained below Shasta Dam, and three new access sites would be developed from the south near New York Gulch, Whiskey Creek and the Merry Mountain Site (see above) which would provide access for all registered motor vehicles into the Chappie-Shasta OHV Management Area.

With the development of new OHV access points, motor vehicle use on East Fork Road, Cline Gulch Road and Grizzly Gulch Road would be reduced. Within the OHV Area, new loop trails would be developed, signed and two new trails connecting core riding areas would be constructed across East Fork Road.

Target shooting would be prohibited at most locations around Whiskeytown Reservoir and the Sacramento River Greenway, but a regional firing range would be developed off Iron Mountain Road above Keswick Boat Ramp. Target shooting outside the ISRMA would likely decrease with the development of a regional facility (e.g. BLM lands near Swasey Drive, private lands adjacent to Clear Creek Road).

Coordinated management of vegetation, visual resources, riparian areas and wildlife would reduce fire hazards, improve deer winter range, retain a sustained flow of forest products, protect special status plant and animal species, enhance late successional corridors, protect soil resources and riparian areas, and retain the integrity of important viewsheds.

Alternative B: This alternative attempts to blend active and passive forms of land and water based recreation opportunities together with few areas dedicated to exclusive forms of use. Opportunities for motorcycle and ATV recreation, and target shooting are emphasized in many of the same regions that passive forms of recreation are provided. Where active recreation use levels are expected to be considerable, passive forms of recreation may be restricted or eliminated.

Under this alternative, motorized dependent recreation would be emphasized within the Chappie-Shasta OHV Management Area, while non-motorized recreation opportunities would be emphasized within the Sacramento River Greenway and Clear Creek Greenway. Waterbased recreation opportunities would continue to be emphasized at Whiskeytown and Keswick reservoirs by maintaining existing campgrounds, boat ramps and attendant facilities. Under this alternative, about 215 miles of existing road and trail would be available for all registered motor vehicles throughout the year. Non-motorized trails and staging areas would be developed connecting the Sacramento River Trail to Shasta Dam on both the east and west margins of Keswick Reservoir. A segment of the railroad bed between Matheson and the Staging Area below Shasta Dam would be available for motor vehicle driving in order to enhance an existing network of roads and trails to the west of the railroad bed. Although OHV opportunities would continue over many existing roads within the Clear Creek Greenway, existing roads and trails that could contribute to traffic along East Fork Road would be closed to motor vehicle travel.

A multiple-use, day use area and parking area would be developed at the Merry Mountain site providing access to existing non-motorized trails within the Whiskeytown Unit and new trails within the Clear Creek Greenway, and access for all registered motor vehicles into the OHV Area. An OHV staging area would be maintained below Shasta Dam, and three new access sites would be developed from the south near New York Gulch, Whiskey Creek, and Merry Mountain site (see above) which would provide access for all registered motor vehicles into the Chappie-Shasta OHV Management Area.

With the development of new OHV access points, motor vehicle use on East Fork Road, Cline Gulch Road and Grizzly Gulch Road would be reduced. Within the OHV Area, new loop trails would be developed, signed and one new trail connecting core riding areas would be constructed across East Fork Road.

Target shooting would be prohibited at most locations around Whiskeytown Reservoir and the Sacramento River Greenway, but a regional firing range would be developed north of Walker Mine Road on the east side of Keswick Reservoir. Target shooting outside the

ISRMA would likely decrease with the development of a regional facility (e.g. BLM lands near Swasey Drive, private lands adjacent to Clear Creek Road).

Coordinated management of vegetation, visual resources, riparian areas and wildlife would reduce fire hazards, improve deer winter range, retain a sustained flow of forest products, protect special status plant and animal species, enhance late successional corridors, protect soil resources and riparian areas, and retain the integrity of important viewsheds.

Alternative C: This alternative attempts to maximize relatively passive opportunities for land and water based recreation activities. Opportunities for walking, hiking, horseback riding, bike riding, canoeing, sailing, hang gliding, paragliding, camping and nature study are expanded at the expense of recreational activities which may detract from passive activities. Opportunities for motorcycle and ATV recreation, and target shooting are emphasized in regions which will not detract from passive recreation pursuits.

Under this alternative, motorized dependent recreation would be emphasized within the Chappie-Shasta OHV Management Area, while non-motorized recreation opportunities would be emphasized within the Sacramento River Greenway and Clear Creek Greenway. Waterbased recreation opportunities would continue to be emphasized at Whiskeytown and Keswick reservoirs by maintaining existing campgrounds, boat ramps and attendant facilities. Under this alternative, about 200 miles of existing road and trail would be available for all registered motor vehicles throughout the year. Non-motorized trails and staging areas would be developed connecting the Sacramento River Trail to Shasta Dam on both the east and west margins of Keswick Reservoir.

A day use area and parking area would be developed at the Merry Mountain site providing access to existing non-motorized trails within the Whiskeytown Unit and new trails within the Clear Creek Greenway. An OHV staging area would be maintained below Shasta Dam, and two new access sites would be developed from the south near New York Gulch and Whiskey Creek which would provide access for all registered motor vehicles into the Chappie-Shasta OHV Management Area.

With the development of new access points, motor vehicle use on East Fork Road, Cline Gulch Road and Grizzly Gulch Road would be reduced. Within the OHV Area, new loop trails would be developed and signed, but no new trails connecting core riding areas would be constructed across East Fork Road. Although OHV opportunities would continue over many existing roads within the Clear Creek Greenway, existing roads and trails that could contribute to traffic along East Fork Road would be closed to motor vehicle travel.

Target shooting would be prohibited at most locations around Whiskeytown Reservoir and the Sacramento River Greenway, and target shooters would likely be forced to find alternative shooting sites. Target shooting outside the ISRMA would likely increase (e.g.

BLM lands near Swasey Drive, private lands adjacent to Clear Creek Road).

Coordinated management of vegetation, visual resources, riparian areas and wildlife would reduce fire hazards, improve deer winter range, retain a sustained flow of forest products, protect special status plant and animal species, enhance late successional corridors, protect soil resources and riparian areas, and retain the integrity of important viewsheds.

Alternative D: This alternative attempts to blend passive and active forms of land and water based recreation opportunities together with few areas dedicated to exclusive forms of use. Opportunities for walking, hiking, horseback riding, bike riding, canoeing, sailing, hang gliding, paragliding, camping and nature study are emphasized in many of the same regions that active forms of recreation are provided. Where passive recreation use levels are expected to be considerable, active forms of recreation may be restricted or eliminated.

Under this alternative, motorized dependent recreation would be emphasized within the Chappie-Shasta OHV Management Area, while non-motorized recreation opportunities would be emphasized within the Sacramento River Greenway and Clear Creek Greenway. Waterbased recreation opportunities would continue to be emphasized at Whiskeytown and Keswick reservoirs by maintaining existing campgrounds, boat ramps and attendant facilities. Under this alternative, about 210 miles of existing road and trail would be available for all registered motor vehicles throughout the year. Non-motorized trails and staging areas would be developed connecting the Sacramento River Trail to Shasta Dam on both the east and west margins of Keswick Reservoir. A segment of the railroad bed between Matheson and Motion Siding would be available for motor vehicle driving in order to provide two-wheel drive access to a fishing opportunity near Motion Siding.

A multiple-use, day use area and parking area would be developed at the Merry Mountain site providing access to existing non-motorized trails within the Whiskeytown Unit and new trails within the Clear Creek Greenway, and access for motor vehicles registered for highway use into the OHV Area. An OHV staging area would be maintained below Shasta Dam, and two new access sites would be developed from the south near New York Gulch and Whiskey Creek which would provide access for all registered motor vehicles into the Chappie-Shasta OHV Management Area.

With the development of new OHV access points, motor vehicle use on East Fork Road, Cline Gulch Road and Grizzly Gulch Road would be reduced. Within the OHV Area, new loop trails would be developed, signed and two new trails connecting core riding areas would be constructed across East Fork Road.

Target shooting would be prohibited at most locations around Whiskeytown Reservoir and the Sacramento River Greenway, but a regional firing range would be developed north

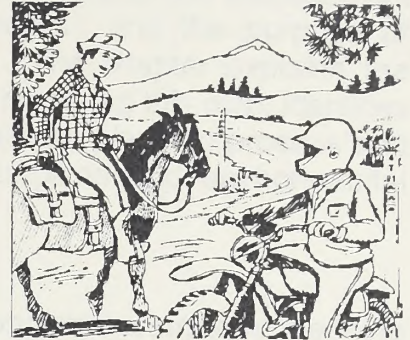
of Walker Mine Road on the east side of Keswick Reservoir. Target shooting outside the ISRMA would likely decrease with the development of a regional facility (e.g. BLM lands near Swasey Drive, private lands adjacent to Clear Creek Road).

Coordinated management of vegetation, visual resources, riparian areas and wildlife would reduce fire hazards, improve deer winter range, retain a sustained flow of forest products, protect special status plant and animal species, enhance late successional corridors, protect soil resources and riparian areas, and retain the integrity of important viewsheds.

Rationale For The Preferred Alternative

Alternative D has been identified as the Preferred Alternative under a consensus recommendation of the BLM, Forest Service, National Park Service, and Bureau of Reclamation. Although this alternative is the one that those Federal agencies believe best addresses the issues that have been identified by planning participants and accommodates the various public demands on current and future Federal lands within the ISRMA and the region as a whole, the reader should be aware that this plan is a DRAFT plan only. Following comment on this draft plan and environmental impact statement, a proposed action will be developed and released within a FINAL plan and environmental impact statement. The proposed action within the FINAL plan could contain compatible elements within each of the alternatives.

Guidance common to all alternatives and specific measures within Alternative D seem to best accommodate recreation demands, wildlife needs, and socio-cultural-economic considerations on Federal lands within the ISRMA and within the region as a whole. The rationale for selecting this alternative as the preferred alternative is further described within CHAPTER 2, ALTERNATIVES, RATIONALE FOR THE PREFERRED ALTERNATIVE.



The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public.

Background

In 1966, the Bureau of Land Management (BLM) was created by an act of Congress. The BLM was created to manage the public lands of the United States. The BLM was created to manage the public lands of the United States. The BLM was created to manage the public lands of the United States.

The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public.

People involved with the BLM have helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public.

One of the first things that the BLM did was to develop a plan for the public lands. The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public.

Due to the success and support from the public, the BLM was able to develop a plan for the public lands. The public has helped in developing the plan and the plan has helped in developing the public. The public has helped in developing the plan and the plan has helped in developing the public.

Chapter 1: INTRODUCTION

This chapter will familiarize the reader with the Interlakes Special Recreation Management Area (ISRMA), the coordinated planning effort for this region, and the purpose of preparing this plan and environmental impact statement. The chapter explains the background of the ISRMA, details the purpose and need for preparing this plan, identifies unresolved issues, describes the planning area, summarizes the planning process and illustrates the relationship of this planning effort to other plans and environmental documents.

Background

In June of 1993, the Bureau of Land Management (BLM) completed a strategic planning process governing public lands administered through the Redding Resource Area. Development of the plan, called the Redding Resource Management Plan, was a four year process of collaboration with the public, State agencies, Federal agencies, county governments and local organizations.

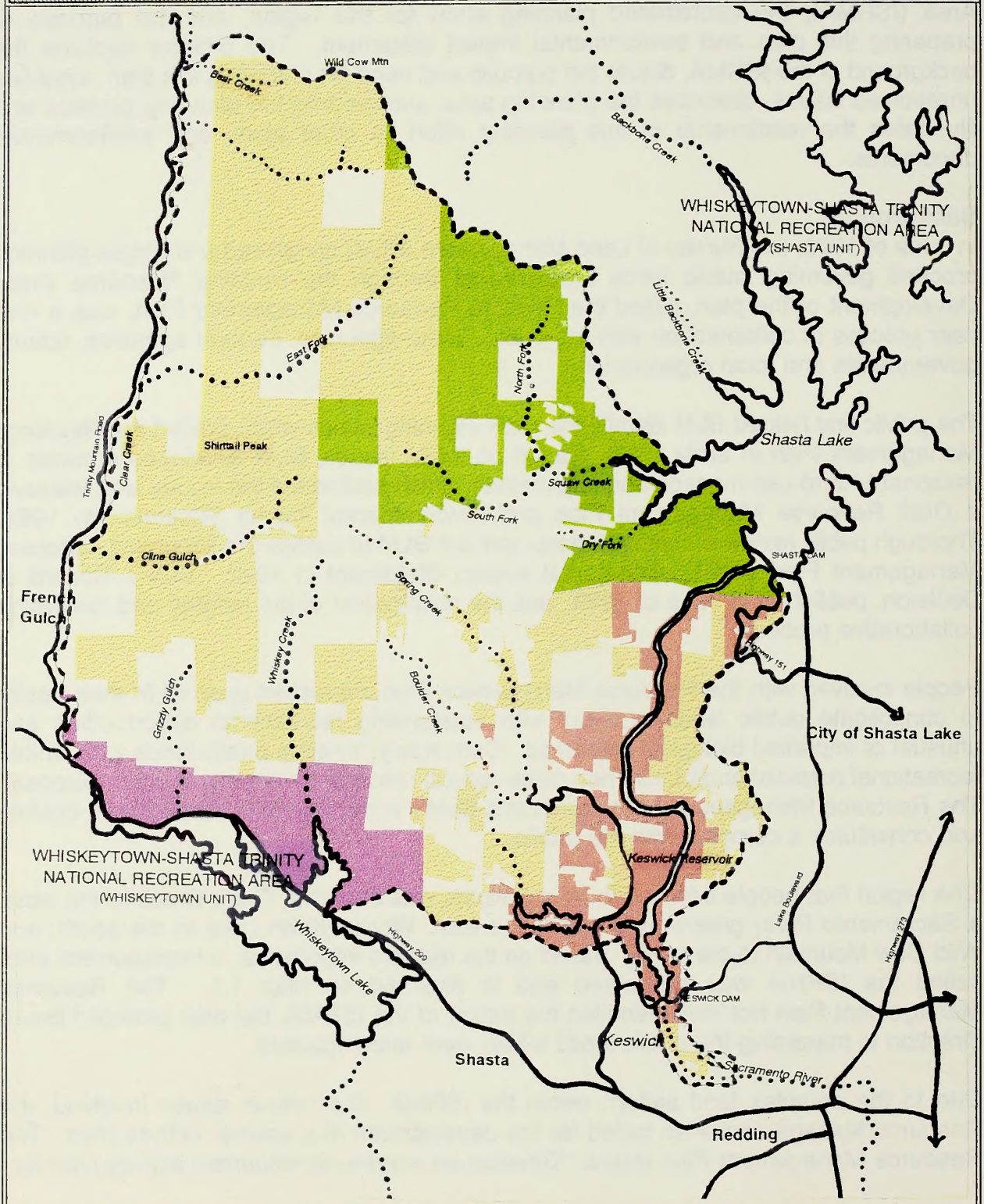
The public first helped BLM identify the main planning issues which guided the Resource Management Plan in early 1989. Based on these issues, BLM developed a series of reasonable land-use management alternatives which addressed the issues and released a Draft Resource Management Plan and Environmental Impact Statement in 1991. Thorough public review of that draft document led BLM to publish the Proposed Resource Management Plan and Environmental Impact Statement in 1992. BLM's Record of Decision, published in June of 1993, was the culmination of the lengthy and rewarding collaborative process.

People involved with the Resource Management Plan impressed upon BLM their desire to consolidate public lands in areas with outstanding recreational opportunities and unusual or imperiled biological resources. Conversely, existing public lands with limited recreational potential and/or common place natural resources were identified for disposal. The Resource Management Plan represents BLM's commitment to these public desires and constitutes a compact with the public.

One region that people believed to be significant was bound by Clear Creek to the west, a Sacramento River greenway divide to the east, Whiskeytown Lake to the south, and Wild Cow Mountain to the north. Based on the region's importance, a management area called the ISRMA was delineated and is depicted on Map 1.1. The Resource Management Plan not only identified the extent of the ISRMA, but also provided broad direction in managing the public lands which were encompassed.

Due to the complex land pattern within the ISRMA, and unique issues involved, the Resource Management Plan called for the development of a specific activity plan. The Resource Management Plan states, *"Develop an integrated resources activity plan for*

Map 1.1
Interlakes Special Recreation Management Area



the Interlakes Special Recreation Management Area which: identifies priority land acquisition needs, identifies sensitive resource protection locations, details the trail and management facilities development/maintenance needs, identifies potential site(s) for a regional firing range as proposed by a requesting agency(s), delineates Visual Resource Management Class areas, identifies important public interpretive needs, describes needed visitor services, details resource monitoring conditions and evaluates possible designation as a National Recreation Area".

Purpose of and Need for Action

The ISRMA plan is being developed in order to resolve management issues and concerns that were identified by the public and various public agencies. For further information regarding the process used to identify management issues and concerns, refer to Chapter Five (Consultation and Coordination). Issues and concerns were related to recreation management, vegetation management, wildlife management, law enforcement/emergency response/hazard reduction, visual resources management, and road access and transportation.

Recreation Management. Key questions related to this topic were: 1) What will the greenway look like that will connect the City of Redding to Shasta Dam along the Sacramento River? 2) What type of non-motorized recreation uses will be emphasized and where will they be emphasized? 3) How will recreational uses be zoned to reduce recreational and environmental conflicts? 4) Where are appropriate camping areas and which regions should be closed to overnight camping? 5) What should be the boundary of the Off-Highway Vehicle Management Area which will serve as a regional focus for motorized recreation? 6) What recreational support facilities should be provided within the ISRMA (eg. trails, restrooms, etc.) and where should they be developed? 7) Is there a need to develop a regional firing range within the ISRMA, if so, what will it look like and where might it be located? 8) What types of opportunities will be provided for hunters? 9) What type of recreational opportunities should be provided on Keswick Reservoir? 10) What types of organized recreation events will be allowed within the ISRMA and how will those events be authorized?

Vegetation Management. Key questions related to this topic were: 1) How will fire hazards and ignition sources be reduced? 2) How will "Riparian Reserves" be managed? 3) How will "Matrix Lands" be managed? 4) How will habitat for special status species be managed? 5) What lands should be available for the sustained supply of forest products? 6) What should the desired plant communities be within the area and how might those desired plant communities be provided?

Wildlife Management. Key questions related to this topic were: 1) Is there potential to develop a fishery on Spring Creek above Iron Mountain Mine and below Stowell Mine? 2) Should fish be stocked in any water bodies within the ISRMA including Flat Creek, Spring Creek, etc? 3) How will winter range habitat for the Weaverville deer herd be

managed?

Law Enforcement/Emergency Response/Hazard Reduction: Key questions related to this topic were: 1) How will emergencies be addressed? 2) How will unauthorized uses be controlled (eg. illegal shooting, trash dumping, squatting, etc.)? 3) How will vandalism to private property (including mining claims), and public property be prevented?

Visual Resources Management: The key question related to this topic was: 1) How will visual resources be managed (eg. Visual Resources Management Classifications)?

Road Access and Transportation: Key questions related to this topic were: 1) What type of motorized access should be provided to the Sacramento River between Shasta Dam and Keswick Dam? 2) What type of appropriate access will be provided into and away from the ISRMA? 3) What roads and trails will be available for motorized recreation and other motorized uses under BLM's "LIMITED" vehicle designation? 4) Will trails and roads be closed during specific periods of the year in order to protect various resources?

Unresolved Issues

Some issues or concerns that were identified could not be resolved at this time. These issues are listed below and the reason why they were unresolved is disclosed.

- 1) *Is there a need to establish a contingency fund to help alleviate unforeseen and/or unidentified hazards?* This issue is beyond the scope of the planning effort. Although some regions within the ISRMA may contain hazardous levels of acid mine drainage, the need to establish a contingency fund is best addressed within Remedial Investigations/Feasibility Studies prepared in conjunction with the Environmental Protection Agency.
- 2) *How will wildfire be suppressed?* Individual wildfire suppression strategies are periodically developed by BLM, Forest Service, National Park Service and Bureau of Reclamation. A comprehensive fire suppression strategy for the ISRMA is more appropriately the result of a local operating plan.
- 3) *Should the area be designated as a component of the Whiskeytown-Shasta-Trinity National Recreation Area?* Although BLM feels that public lands within the ISRMA would be welcome additions to the Whiskeytown-Shasta-Trinity National Recreation Area, no formal recommendation is being made at this time.
- 4) *What private lands offered for sale should be priority acquisitions for BLM or other agencies?* Although BLM is interested in acquiring private land within the ISRMA from willing sellers via purchase or exchange, no priorities have been delineated within this plan. BLM does not want to give private landowners the impression that they are being pressured to sell their land.

- 5) *Will user fees be charged for any of the recreational opportunities within the ISRMA?* User fees are normally associated with specific recreational facilities. Although the appropriateness of a user fee is better addressed within a facility development plan and/or operating plan, BLM and other agencies are under enormous pressure to implement cost recovery programs. Readers should be aware that strong consideration will be taken to provide recreation facilities that can be maintained with user fees when appropriate.
- 6) *What lands should be closed to recreation uses due to natural or manmade hazards?* Some BLM parcels within the Iron Mountain Area (see Chapter 2 - Alternatives) contain hazardous levels of acid mine drainage and recreation uses would be greatly restricted. This issue has been resolved only partially and would be more appropriately discussed within Remedial Investigations/ Feasibility Studies prepared in conjunction with the Environmental Protection Agency.

Description of the Planning Area

The ISRMA is a 74,845 acre region bordered by Clear Creek to the west, a Sacramento River greenway divide and Shasta Lake to the east, Wild Cow Mountain to the north, and Highway 299 to the south (Map 1.1). The ISRMA encompasses approximately 26,700 acres of BLM land, 11,200 acres of Forest Service land, 5,300 acres of Bureau of Reclamation land, 4,500 acres of National Park Service land, and 27,100 acres of private land.

Planning Process Overview

The ISRMA plan serves as a regional prescription for cooperative management between the BLM, National Park Service, Bureau of Reclamation, California Department of Parks and Recreation, and local government. Although land-use allocations are recommended on Federal lands other than BLM, implementation of those recommendations is entirely at the discretion of the respective Federal agencies. Furthermore, land-use allocations are shown on private lands only so the reader can understand how BLM would manage the land if it were acquired.

The ISRMA plan describes four separate alternatives to the no action alternative for management of Federal lands within the ISRMA. Of the four, one alternative is identified as the preferred alternative and was selected under a consensus recommendation of BLM, National Park Service, Bureau of Reclamation, and Forest Service. Federal agencies other than BLM, may choose to implement any or all recommendations made within the plan by tiering to this document or adopting portions of this document.

BLM follows a three tiered planning process for formulating decisions and conducting activities within a specific region. The Resource Management Plan served as BLM's first tier and it established broad direction in the management of public land within various regions, including the ISRMA. The ISRMA plan will serve as BLM's second tier and it

prescribes certain actions and resolves specific issues that are required to meet the broad objectives identified within the Resource Management Plan. Individual project plans (eg. timber harvest plans, trail development plans) are the final tier within BLM's planning process.

Relationship to Other Planning Efforts and Documents

Decisions made or recommendations proposed within the ISRMA plan are influenced and constrained by various Executive Orders, national and state laws, local ordinances, departmental and agency regulations, and prior planning documents. At the discretion of various agencies, some of these planning documents may be modified in order to implement decisions identified within the ISRMA plan. A number of the relevant planning documents are summarized below:

Record of Decision, BLM's Redding Resource Management Plan (June, 1993): This plan formulates broad land use decisions for public lands within the ISRMA. The Record of Decision directs BLM to: 1) provide a regional opportunity for motorized recreation with a focus within the Gene Chappie-Shasta Off-Highway Vehicle Management Area; 2) enhance non-motorized recreation opportunities within the area via a greenway connecting Redding to Shasta Dam along the Sacramento River; 3) maintain or improve the long-term sustained yield of forest products from available commercial forest lands; 4) improve the long-term condition and protection of deer winter range habitat; 5) maintain special status species habitat; 6) maintain the existing scenic quality of the area; and 7) maintain opportunities to explore and develop freely available minerals on public lands.

Record of Decision, Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (April, 1994): This plan modifies BLM's Resource Management Plan and the Shasta-Trinity National Forest's unit plans and Forest Plans. The Record of Decision prescribes standards and guidelines for management of BLM and Forest Service lands within the range of the northern spotted owl and delineates aquatic conservation strategies.

Decision Record, BLM and Forest Service Shasta Off-Highway Vehicle Area (November, 1984): This plan established an off-highway vehicle management region within the ISRMA which encompassed BLM and Forest Service lands. Although the ISRMA plan will replace this plan, the off-highway vehicle management emphasis within the established region was adopted within BLM's Resource Management Plan.

Master Plan, Whiskeytown/Shasta/Trinity Whiskeytown Unit (July, 1976): This plan provides overall direction to the National Park Service in management of the Whiskeytown Unit. The plan specifies broad objectives for natural resources, cultural resources and recreation management, and delineates management zones. This plan is similar in scope to BLM's Resource Management Plan and the Forest Service's, Forest and Resource Management Plan.

Decision Record, Amendment to the 1976 Master Plan (March, 1989): This plan amended the Master Plan and establishes scenic quality objectives, details management zoning concepts, and formulates the National Park Service's mining and minerals management policy.

Decision Record, Natural Resources Management Plan (October, 1975): This plan describes actions that the National Park Service will take to manage the resources within the Whiskeytown National Recreation Area. The plan specifies management objectives, details actions for vegetative management, wildlife management, soil stabilization, and water quality, and establishes a carrying capacity for the recreation area.

Natural Resources Management Program, and Addendum to the Natural Resources Management Plan (August, 1985): This plan revised the Natural Resources Management Plan and identifies projects required to implement the plan.

Decision Record, Fire Management Plan, Whiskeytown/Shasta/Trinity National Recreation Area (June, 1993): This plan amended the Natural Resources Management Plan and specifies fire management objectives for the Whiskeytown Unit. The plan also develops fire management strategies, delineates fire management units, details fire management responsibilities, and formulates the wildfire management, hazard reduction and prescribed fire programs.

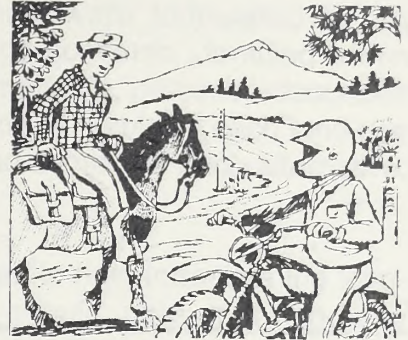
Record of Decision, Forest Land and Resource Management Plan (April, 1995): This plan provides overall direction to the Forest Service in management of the Shasta/Trinity National Forest. The plan specifies management goals and objectives, identifies standards and guidelines, and delineates management prescriptions.

National Recreation Management Area Guide (April, 1996): This Guide integrates past decisions that are still pertinent for managing the NRA today with standards, guidelines and management prescriptions incorporated from the April, 1995 Forest Land and Resource Management Plan.

Whiskeytown/Shasta/Trinity National Recreation Area Management Plan (August, 1988): This plan amended the Operation and Development Plan for the Shasta and Trinity Units of the National Recreation Area prepared in 1982. This plan provides specific direction in management of the National Recreation Area and gives direction in the management of multiple resources.

Three Records of Decision, Iron Mountain Mine (October, 1986; September, 1992; September, 1993): These plans prepared by the Environmental Protection Agency specify various acid mine drainage treatments at Iron Mountain Mine. The plans are in various stages of implementation and influence management options within the ISRMA plan. The Records of Decision are periodically amended as new technology is explored

and different treatments are studied within Remedial Investigations/Feasibility Studies.



The chapter discusses various alternatives for the project, including the proposed project, the no-action alternative, and the proposed project with mitigation. The chapter also discusses the impacts of the alternatives and the benefits of the proposed project with mitigation.

Introduction

A comparison of Federal, State, and local agency actions and the proposed project is presented in this chapter. The chapter also discusses the impacts of the alternatives and the benefits of the proposed project with mitigation.

The proposed project is a development project that will result in the construction of a new building. The project will also result in the construction of a new parking lot and a new access road. The project will also result in the construction of a new water supply system and a new sewerage system.

Alternative One

The first alternative is the proposed project with mitigation. This alternative includes the construction of a new building, a new parking lot, a new access road, a new water supply system, and a new sewerage system.

The second alternative is the proposed project without mitigation. This alternative includes the construction of a new building, a new parking lot, and a new access road. This alternative does not include the construction of a new water supply system or a new sewerage system.

Chapter 2: ALTERNATIVES

This chapter describes various land-use alternatives which were formulated by an interagency, interdisciplinary team to address the issues and concerns identified within Chapter 1. This chapter introduces the alternative formulation process, describes alternative themes, discloses guidance common to all alternatives, explains each land-use alternative, provides rationale for the preferred alternative, and compares each alternative.

Introduction

A consortium of Federal, state, and local agencies were invited to help formulate the land-use alternatives described within this plan. Readers should note that land-use alternatives which are described within the text (or depicted on maps) apply only to lands administered by BLM unless specifically identified otherwise. Land-use allocations described for lands administered by other federal, state or local agencies are subject to the approval of the particular agency. Furthermore, private land is not subject to land-use allocations depicted within this plan.

Five land-use alternatives were established to resolve issues identified within the Interlakes Special Recreation Management Area (ISRMA). Each land-use alternative proposes a unique mix of solutions based on the types of resource uses being emphasized. Because recreational uses were the most controversial aspects of the planning effort, themes were established around varying types of recreational use.

Alternative Themes

The five land-use management alternatives provide an array of realistic or potential management options. The five generic land-use alternatives include the No Action Alternative and alternatives A, B, C, and D.

No Action: The No Action Alternative is comprised of several existing plans which provide management direction for portions of the ISRMA. This alternative consists of land-use decisions which are based on jurisdictional boundaries, cooperative management ventures, and specific resource concerns. Land-use decisions detailed within some existing plans overlap with decisions depicted in other planning documents and, in some cases, may be contradictory. Major plans defining the No Action Alternative are shown in Table 2.1.

Table 2.1
Major Plans Establishing No Action Alternative

Plan Names and Dates	Agency(s)
Redding Resource Management Plan (1993);	BLM
Master Plan, Whiskeytown/Shasta Trinity Whiskeytown Unit (1976); Amendment to Master Plan (1989); Natural Resources Management Plan (1975); Addendum to Natural Resources Management Plan (1985); Fire Management Plan, Whiskeytown/Shasta/Trinity National Recreation Area (1993); Compendiums (multiple years)	NPS
Forest and Resource Management Plan (1995); Whiskeytown/Shasta/Trinity National Recreation Area Management Plan (1988); National Recreation Management Area Guide (1996)	FS
Three Records of Decision for Iron Mountain Mine (1986, 1992, 1993)	EPA, BR
Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (1994); Shasta Off-Highway Vehicle Management Plan (1984)	BLM, FS
General Recreation Development Plan (1968)	BR, Shasta County

Alternative A: This alternative attempts to maximize relatively active opportunities for land and water based recreation activities. Opportunities for motorcycle and ATV recreation, and target shooting are expanded at the expense of recreational activities which may be incompatible. Opportunities for walking, hiking, horseback riding, bike riding, canoeing, sailing, hang gliding, paragliding, camping, and nature study are emphasized in regions which will not conflict with active recreation pursuits.

Alternative B: This alternative attempts to blend active and passive forms of land and water based recreation opportunities together with few areas dedicated to exclusive forms of use. Opportunities for motorcycle and ATV recreation, and target shooting are emphasized in many of the same regions that passive forms of recreation are provided. Where active recreation use levels are expected to be considerable, passive forms of recreation may be restricted or eliminated.

Alternative C: This alternative attempts to maximize relatively passive opportunities for land and water based recreation activities. Opportunities for walking, hiking, horseback riding, bike riding, canoeing, sailing, hang gliding, paragliding, camping and nature study are expanded at the expense of recreational activities which may detract from passive activities. Opportunities for motorcycle and ATV recreation, and target shooting are emphasized in regions which will not detract from passive recreation pursuits.

Alternative D: This alternative attempts to blend passive and active forms of land and water based recreation opportunities together with few areas dedicated to exclusive forms of use. Opportunities for walking, hiking, horseback riding, bike riding, canoeing, sailing,

hang gliding, paragliding, camping and nature study are emphasized in many of the same regions that active forms of recreation are provided. Where passive recreation use levels are expected to be considerable, active forms of recreation may be restricted or eliminated.

Some resource management guidance would be common to all alternatives. Much of this guidance is identified within the planning documents listed within Chapter One. The following additional guidance is proposed and is related to vegetation management, wildlife and fisheries management, recreational resources management, road access and transportation, law enforcement, emergency response and hazard reduction, and visual resources management.

Vegetation Management

Vegetation within the ISRMA is managed by numerous public and private landowners for various land-use objectives. This section provides overall vegetation management direction to BLM regardless of the land-use alternative selected. This section describes desired future conditions, fuels management, special status plant management, historical landscape management, riparian vegetation management, and forest and woodland management.

Desired Future Conditions: In order to provide broad direction regarding current and future BLM administered lands, desired plant communities (DPC's) have been developed for the ISRMA and are depicted on the Desired Plant Community Map. DPC's allow public land managers to evaluate current vegetative conditions within the ISRMA in light of desired vegetative conditions and develop management practices which perpetuate or create the desired condition.

A DPC is a plant community which produces the kind, amount, and proportion of vegetation needed to meet or exceed the land-use objectives established for a site or region. A DPC must be within the sites capabilities to produce the desired vegetation through management, land treatment, or a combination of both. A DPC may be very specific or broad depending upon the amount of resource information available and specificity of land-use objective.

DPC's are provided below by numbers which correspond to the Desired Plant Community Map and qualitatively describe species composition, cover, and structure. DPC's were formulated using a Geographical Information System Model which was adjusted for concern over deer winter range conditions, soil erosion hazard ratings, forest productivity and fuel loadings. These DPC's may be further refined once site specific inventories are conducted and other factors are considered.

DPC 1 - Late successional, mixed conifer forest community. Desired plant community is characterized by a dense crown closure (60% to 100%), multiple vertical layers (2 to 4 layers), small forest openings (1/4 acre to 2 acres), multiple age classes, multiple snags and downed woody debris. Douglas-fir, ponderosa pine, sugar pine, white fir and incense cedar would

be dominant conifers, while black oak, canyon live oak, coast live oak and madrone would be found within pockets or the understory.

- DPC 2 - Early successional, mixed conifer forest community. Desired plant community is characterized by a moderate to dense crown closure (50% to 100%), few vertical layers (1 to 2 layers), small to medium forest openings (1/4 acre to 5 acres), few age classes, few to multiple snags and downed woody debris. Douglas-fir, ponderosa pine, sugar pine, white fir and incense cedar would be dominant conifers, while black oak, canyon live oak, coast live oak and madrone would be found within pockets.
- DPC 3 - Mixed conifer/hardwood forest community. Desired plant community is characterized by a moderate to dense crown closure (50% to 100%), few to multiple layers of conifers and hardwoods (1 to 4 layers), small to medium forest openings (1/4 acre to 5 acres), multiple age classes, multiple snags and downed woody debris. Douglas-fir, ponderosa pine, sugar pine, white fir and incense cedar would be co-dominate with black oak, madrone, canyon oak, coast live oak and madrone hardwoods.
- DPC 4 - Mixed hardwood and multi-seral brush community. Desired plant community is characterized by a low to moderate crown closure (20% to 50%), few vertical layers (1 to 2 layers), small to large forest openings (1/4 acre to 10 acres), multiple age brush species, multiple age hardwood species, few snags and downed woody debris. Canyon live oak, bigleaf maple, black oak, and California bay would be the primary hardwood species, while multi-seral wedgeleaf ceanothus, lemon ceanothus, deer brush, greenleaf manzanita, chamise, various grasses and forbs would be the primary ground cover.
- DPC 5 - Closed cone conifer and multi-seral brush community. Desired plant community is characterized by a low to moderate crown closure (20% to 50%), few vertical layers (1 to 2 layers), small to large forest openings (1/4 acre to 10 acres), multiple age brush species, multiple age conifer species, few snags and downed woody debris. Knobcone pine and grey pine would be the primary conifer species, while multi-seral wedgeleaf ceanothus, lemon ceanothus, deer brush, greenleaf manzanita, chamise, various grasses and forbs would be the primary ground cover.
- DPC 6 - Mixed chaparral community. Desired plant community is characterized by small to large openings (1/4 acre to 10 acres), multiple age brush species, few snags and downed woody debris. Multi-seral wedgeleaf ceanothus, lemon ceanothus, deer brush, greenleaf manzanita, chamise, various grasses and forbs would be the primary ground cover.

Fuels Management. Most of the ISRMA is characterized by heavy fuel loadings due, in part, to fire suppression activities over the last 50 years. Although the desired plant communities described above incorporate conditions required to reduce overall fuel loadings, two desired plant communities are of particular concern to BLM managers. Existing conditions where the closed cone conifer and multi-seral brush community (DPC 5), and mixed chaparral community (DPC 6) are desired require major manipulation in order to be achieved.

In order to achieve and perpetuate these two communities, BLM would coordinate closely with the National Park Service, Forest Service, Bureau of Reclamation and California Department of Forestry and Fire Prevention. Manipulation of the brush components within these two communities would be conducted through prescribed burning (refer to Wildland Fire Management Plan, National Park Service, 1993), wildfire suppression policies, mechanical clearing when consistent with agency policies, or other means.

Special Status Plant Management: The DPC's identified above encompass populations or aggregations of special status plant species (refer to Chapter 3 - Affected Environment). These populations would be protected regardless of the proposed DPC. Further guidance for BLM lands within the ISRMA include:

1. Map, record, and protect essential habitat for known and newly discovered special status plant species until site specific conservation strategies are developed.
2. Analyze the potential effects of all ground-disturbing projects on special status plants and their habitat. Mitigate project effects to avoid a decline in species viability.
3. Monitor the effects of management activities on special status plants. If monitoring results show a decline in species viability, alter management strategy.
4. Provide reports of new and recurrent visits to special status plant populations to the California Natural Diversity Database (California Department of Fish and Game).
5. Coordinate special status plant inventory and protection efforts with California Department of Fish and Game, Fish and Wildlife Service, National Park Service, Forest Service, Bureau of Reclamation, California Native Plant Society, and other concerned agencies, organizations, citizens and landowners.

Historical Landscape Management. One aspect of cultural resources management and planning is the consideration of significant historic landscapes. This includes ornamental

and cultigen plantings, and historic landscape restoration through vegetation manipulation. A rural historic landscape is defined as a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads, waterways and natural features.

Within the ISRMA there has been considerable manipulation of vegetation over time, and some of this manipulation has historical importance. Care must be used if there is modification or removal of exotic vegetation that was part of a historic location (such as a homestead or townsite) so that change does not detract from the historic setting of the site. For this reason, some historic vegetation within the ISRMA may be protected regardless of the proposed DPC. Further guidance for BLM lands within the ISRMA include:

1. Protect the historic vegetative components associated with any property deemed eligible for inclusion in the National Register of Historic Places (National Register) until site specific conservation strategies are developed.
2. Analyze the potential effects of all ground-disturbing projects on vegetation that may be associated with any property deemed eligible for inclusion in the National Register. Mitigation may require retaining all or a representative sample of vegetation if associated with a property.
3. Monitor the viability and rate of spread of vegetation associated with any property deemed eligible for inclusion in the National Register. If monitoring results show an increase in introduced (exotic) vegetation, manipulate vegetation to perpetuate desired plant communities.
4. Evaluate the historical context of vegetation that may be associated with any property deemed eligible for inclusion in the National Register when preparing management plans to eradicate noxious weeds and develop measures, if appropriate, to protect the vegetative components of these properties.

Riparian Area Management: An important component of the report entitled, Forest Ecosystem Management: An Ecological, Economic, and Social Assessment and subsequent "Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl" is the protection and improvement of riparian and aquatic ecosystems. In preparing the ISRMA plan, agencies delineated some of the interim riparian reserves which are shown on the Riparian Reserve Map. Although site specific riparian management strategies have not been developed at this time for each riparian reserve, the following guidelines have been proposed regarding overall riparian area management on BLM lands within the ISRMA:

1. Retain interim riparian reserve widths until site specific analysis can be conducted.
2. Where conditions are achievable, manage riparian reserves under the late successional, mixed conifer forest community (DPC 1).
3. Exclude riparian reserve acreage in calculations of a sustainable timber harvest.
4. Remove trees within riparian reserves only where catastrophic events degrade riparian conditions, or stocking requires the removal of trees to restore riparian condition.
5. Treat brush and other fuels within riparian reserves to mimic natural occurrences of fire.
6. Evaluate existing roads and trails within riparian reserves and develop measures to minimize sediment delivery from the road surface.
7. Provide and maintain fish passage at all road crossings on existing and potential fish-bearing streams.

Forest and Woodland Management. BLM's Redding Resource Management Plan and Environmental Impact Statement provides broad direction regarding the management of forests and woodlands. One objective of this plan is to maintain or improve the long-term sustained yield of forest products from available commercial forest lands within the ISRMA. Although the desired plant communities described above incorporate conditions required to create and perpetuate productive forest lands, two desired plant communities are of particular concern to BLM managers. Existing conditions where the late successional, mixed conifer forest community (DPC 1), and early successional, mixed conifer forest community (DPC 2) are desired require special treatments to create or perpetuate.

Special actions related to these two forest communities are described below:

1. Inventory newly acquired lands using Timber Production Capability Classifications as directed by BLM Manual, 5200.
2. Conduct regeneration stocking surveys on newly acquired lands as described within BLM Manual, 5700.
3. Formulate final boundaries of riparian reserves in connection with inventories and stocking surveys.

4. Withdraw commercial forested land within final boundaries of riparian reserves.
5. Develop coordinated treatments with the Forest Service which create or perpetuate proposed DPC's.

Wildlife and Fisheries Management

Chapter 3 (Affected Environment) identifies wildlife populations that are known or suspected within the ISRMA. In establishing desired plant communities (see Vegetation Management), BLM used a model that maximized winter range habitat for the Whiskeytown deer herd. In delineating interim riparian reserves, BLM used standards and guidelines established to protect fish bearing streams. The following, additional guidance is proposed on BLM lands to improve winter range habitat and fisheries habitat.

Deer Winter Range Habitat: Critical winter range habitat for the Whiskeytown deer herd is located primarily on south facing slopes within the Clear Creek/Whiskey Creek watershed in the ISRMA. This habitat is found at elevations below 3,500 feet and is currently dominated by mixed chaparral and hardwood vegetation that is over 50 years in age. The mixed chaparral community (DPC 6) and mixed hardwood and multi-seral brush community (DPC 5) within the critical winter range are the most limiting for wintering deer. Supplemental guidance for each of those two desired plant communities within the critical deer winter range would be:

1. Use a fire suppression policy or treat the mixed chaparral desired plant community (DPC 6) to approximate a 30 year average fire occurrence.
2. Conduct treatments on the mixed chaparral desired plant community (DPC 6) that would favor deer browse brush species such as lemon ceanothus, wedgeleaf ceanothus and deer brush.
3. Use a fire suppression policy or treat the mixed hardwood and multi-seral brush desired plant community (DPC 5) to approximate a seven year average fire occurrence.
4. Conduct treatments on the mixed hardwood and multi-seral brush desired plant community (DPC 5) that would favor deer browse brush species and mast producing hardwoods.

Motor Vehicle Use Within Deer Winter Range: Approximately 53 miles of existing road and trail cross through critical winter range habitat within the ISRMA. Heavy motor vehicle traffic on these roads and trails while deer are wintering could be detrimental to the Whiskeytown herd, therefore, motor vehicle use levels and herd conditions would be closely monitored during the wintering period. If herd conditions decline, and are related to motor vehicle related stress, limits would be imposed on the number motor vehicles

that would be allowed over roads and trails between November 15 to April 15. This may include prohibiting motor vehicles altogether from select roads and trails between November 15 to April 15.

Fisheries Management: Flat Creek provides the greatest opportunity for fisheries restoration in the ISRMA. Flat Creek has been changing rapidly ever since Spring Creek was diverted into the Flat Creek drainage. The following guidance related to Flat Creek is proposed under all alternatives:

1. Continue to support acid mine drainage treatments for the Stowell Mine which discharges into Flat Creek.
2. Remove obstructions within Flat Creek which may prohibit fish passage from Keswick reservoir.
3. Feather banks and establish flood plains below residences living off Iron Mountain Road to accommodate the increased flow of water.

Recreational Resources Management

Some aspects of recreational resources management would be common to all alternatives. The following guidance related to the Chappie-Shasta OHV Management Area, Keswick Reservoir, special recreation uses, and additional development is proposed regardless of the land-use alternative selected.

Chappie-Shasta OHV Management Area: The Chappie-Shasta Off-Highway Vehicle Management Area is a major feature of the ISRMA. This management area was first delineated by BLM and Forest Service in 1984 and is encompassed by the ISRMA planning boundary. The management area boundary is redefined under each alternative and serves three purposes. First, the boundary identifies a region where special attention must be directed to manage motor vehicle use. Second, the boundary delineates a recreation area where people can be directed into. Third, the boundary establishes a cooperative project area where funding has been appropriated from the California Off-Highway Motor Vehicle Recreation Division.

Under all alternatives, the following guidance is proposed (or already exists) for the Chappie-Shasta Off-Highway Vehicle Management Area:

1. Prohibit cross country travel by motor vehicles. Strive to install signs/markers along all roads and trails that are available for motor vehicle use and ensure that vehicles stay off roads and trails that have been posted as closed to motor vehicle use.
2. Require all vehicles using the Chappie-Shasta Off-Highway Vehicle Management Area to be properly registered with the State of California and

fitted with a properly mounted spark arrestor of a type approved by the State of California.

3. Close select roads and trails within the Chappie-Shasta Off-Highway Vehicle Management Area during especially hazardous fire weather.
4. Provide maps or brochures delineating the roads and trails available for motor vehicle use that: a) show private property boundaries; b) encourage visitors not to trespass; and c) emphasize proper use of the area such as the "Tread Lightly" and "Leave No Trace" programs.
5. Develop or retain road densities and motor vehicle use levels that reflect planned recreation opportunities including motor vehicle thresholds established to protect wintering deer.

Keswick Reservoir. Fishing and pleasure boating are the most popular forms of recreation on Keswick Reservoir. Under all alternatives, the following guidance is proposed:

1. Prohibit boating, swimming and fishing within the Spring Creek Arm of the reservoir.
2. Install signs along the Spring Creek arm of the reservoir that warn visitors that the water may contain hazardous levels of acid mine drainage.
3. Provide information at Keswick Boat Ramp that warns visitors of current health issues such as warning visitors not to eat fish livers from the reservoir due to possible acid mine contamination.
4. Prohibit boating and swimming in the reservoir between the log booms and Keswick Dam.

Special Recreation Uses: Roads and trails within the ISRMA are popular for special recreation uses such as competitive and commercial motorcycle or mountain bike events. Under all alternatives, the following guidance is proposed:

1. Designate the abandoned railroad grade below Shasta Dam as a "special area" pursuant to regulations found under 43 CFR 8372.05(g) and require special recreation use permits for camping. Prohibit camping on or along the railroad bed when camping space is available within the Shasta Campground.
2. Limit special uses that are exclusive on roads, trails or staging areas within the ISRMA to 20 days per year. This would include any event where

exclusive use over roads and trails is required for safety purposes.

Additional Recreation Development: The ISRMA plan discloses where some recreation facilities may be located if funding is available, or private land is acquired. Although not anticipated, additional facilities (e.g. restrooms) may be developed in the future to address growing recreation demands.

Road Access and Transportation

Under several land-use alternatives, motor vehicle use on select BLM roads or trails may be restricted by season or prohibited altogether. Some of these roads or trails may provide physical motor vehicle access to private property surrounded by public land, or may be used to access current or future mining claims. Because BLM is not considered a public road authority, individual motor vehicle access over roads and trails can only be secured by perfecting a vested right (i.e. right-of-way), or other use authorization (i.e. timber sale contract on public lands). The following guidance is proposed regardless of the land-use alternative selected.

1. Where motor vehicle use is prohibited (or seasonally restricted) over existing BLM roads, ensure adequate motor vehicle access for fire fighting, law enforcement, search and rescue, and related administration.
2. Ensure motor vehicle use over all county claimed roads identified on the Shasta County Roads Systems Map subject to formal abandonment. This would include any additional roads identified and maintained by Shasta County under RS 2477.
3. Honor all approved road rights-of-way on BLM land, and legally recorded easements on acquired lands.
4. In areas where motor vehicle use is prohibited or seasonally restricted, BLM would consider rights-of-way involving new or existing roads after evaluating whether: a) motor vehicle travel is essential; b) motor vehicle use could be restricted to the applicant and this use would not detract from the recreational setting being emphasized; c) new road would not provide the unsuspecting public with an attractive nuisance to a hazardous area; d) motor vehicle use of applicant would not be detrimental to wintering deer or other resource values; and e) no other comparable access could be provided.
5. When motor vehicle use is prohibited (or seasonally restricted) over existing BLM roads that are proposed for use in a mining Plan of Operation or Notice of Intent, attempt to provide comparable access. When no comparable access can be provided, evaluate the proposed motor vehicle access under regulations found within 43 CFR 3809.

6. When granting road use authorizations (e.g. timber hauling) on roads and trails open to motor vehicle use, ensure that roads and trails following use are restored to desired road standards.

Law Enforcement, Emergency Response and Hazard Reduction

The ISRMA encompasses a large region with some areas very difficult to reach due to steep topography and the lack of roads. The remote character of the ISRMA is also one of the attractions to recreationists visiting the area and private landowners living within or adjacent to the area. Remote regions can be difficult to manage in regards to fire suppression, emergency response, search and rescue, and law enforcement. The following BLM guidance is proposed regardless of the alternative selected.

1. When motor vehicle use is prohibited (or seasonally restricted) over existing BLM roads, ensure adequate motor vehicle access for fire fighting, law enforcement, search and rescue, and related administration. Also see "Road Access and Transportation".
2. Prepare annual operating plans and/or agreements with cooperating agencies that would: a) provide law enforcement support across jurisdictional boundaries; b) identify resources available for emergency situations; and c) incorporate agency concerns and legal requirements.
3. Develop partnerships with organized special interest groups to improve response to emergency situations by use of specialized skills, equipment and knowledge of the area.
4. Develop water sources, helicopter landing zones and fuel breaks to assist in the suppression and control of wildfire.
5. Ensure that trails and roads that are available for motorized recreation are properly signed to show the relative degree of difficulty and vehicle suitability.
6. Provide up-to-date maps to public land users and private landowners that show access roads and escape routes in case of wildfire.
7. Develop and provide informational brochures that warn public land users that water quality within the ISRMA may be contaminated with hazardous levels of acid mine drainage.
8. Conduct periodic, interagency task force operations to detect irresponsible and/or illegal actions.
9. Establish a management presence within known problem areas identified

within Chapter 3 (Affected Environment) with visitor services personnel and/or law enforcement rangers.

10. Evaluate the need for an additional peace officer within the western portion of the ISRMA to enforce vehicle restrictions on County roadways, protect private property and natural resources, and serve the public. If an additional peace officer is needed, seek cooperative funding for a peace officer through the California State Parks, Off-Highway Motor Vehicle Recreation Division.

Visual Resources Management

In order to estimate the level of visual quality which would be acceptable to most people, recommended standards for managing the visual resource have been established for the ISRMA and are shown on the Inventory of Visual Quality Objectives Map. These visual quality objectives were based upon estimates of public concern for scenic quality (sensitivity levels), the quality of the landscape (variety class), and distance from the viewing area. Visual quality objectives indicate how much a management activity can contrast visually with the character of the regional landscape.

The inventory was developed using procedures established by the Forest Service and strives to remove subjectivity from the evaluation. The inventory establishes a regional threshold of concern for Federal landowners, and can be used to help delineate areas where major communication sites or other modifications might be located. Because BLM, Forest Service, National Park Service, and Bureau of Reclamation use different procedures to manage visual landscapes, the agencies may use the regional inventory shown on the map to adjust their individual visual resource management strategies.

BLM would manage public lands within the ISRMA under visual resource management guidelines described within BLM Manual 8400. The Inventory of Visual Qualities Objectives Map shows various polygons which help establish visual management objectives. The objectives include VRM I (Retention), VRM II (Partial Retention), VRM III (Modification), and VRM IV (Major Modification). Layperson descriptions applicable to BLM land are defined within Table 2.2.

Table 2.2 Layperson Description of Visual Quality Objectives	
Class	Layperson Description
VRM I (Retention)	The level of change to the characteristic landscape should be very low and must not attract attention.
VRM II (Partial Retention)	The level of change to the characteristic landscape should be low. Management activities can be seen, but should not attract the attention of the casual observer.
VRM III (Modification)	The level of change to the characteristic landscape should be moderate. Management activities may dominate the view of the casual observer.
VRM IV (Maximum Modification)	The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention.

Readers should note that the classification system described above is particularly well-suited to wildland landscapes and not constructed landscapes. Some of the most prominent and important viewsheds within the ISRMA are dominated by human-made structures such as Shasta Dam and Keswick Dam. For this reason, modifications to certain landscapes may need to be evaluated in context of the constructed landscape.

No Action Alternative

The No Action Alternative is formed from decisions made within various planning documents and includes what is currently occurring, or what was planned to occur but has not yet been implemented. The individual management objectives of private landowners are not included and some resource related issues have very little management direction. Land use decisions related to recreational resources management are discussed below for this alternative.

Recreational Resources Management

Recreation uses would be managed within three units corresponding to the individual plans of four Federal land managers. The three units, as shown on the No Action Map, are the Keswick Area, the Chappie-Shasta OHV Management Area, and the Whiskeytown Area.

A. *Keswick Area*

The Keswick Area would be managed by Shasta County for the Bureau of Reclamation emphasizing passive, water-based recreation opportunities. Fishing, boating, canoeing, picnicking, horseback riding, and hiking would be the primary activities featured. The area would be managed mostly as "Roaded Natural" under the Recreation Opportunity Spectrum.

Current facilities and future development within the area would include the following items:

1. Improve the abandoned railroad bed from the northern boundary to Motion Siding into a gravel surfaced road for fishing and camping access.
2. Develop parking areas along the railroad bed.
3. Acquire private land and develop a campground at Motion Siding with primitive facilities and a launching ramp.
4. Develop two primitive campgrounds on the east shore of the reservoir featuring boat access only.
5. Maintain the current boat ramp located on the west shore of the reservoir above Spring Creek.
6. Develop hiking and horseback riding trails along the railroad bed between the current boat ramp and Motion Siding.
7. Encourage a private concessionaire to develop and maintain a marina on

the east shore of the reservoir off Walker Mine Road.

Specific recreational use restrictions within the area would include the following items:

1. Prohibit motor vehicle use on the railroad bed between Keswick boat ramp and Motion Siding.
2. Prohibit motor vehicle use on most BR lands on the east side of Keswick Reservoir.
3. Prohibit target shooting on the east and west side of Keswick Reservoir near campgrounds and the railroad bed.

B. *Chappie-Shasta OHV Management Area*

The OHV Management Area would be managed jointly by the BLM and Forest Service with contributed funding through the California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division. The area would emphasize active recreational opportunities. Intensive OHV recreation and remote touring opportunities would be featured. The area would be managed mostly as "Semi-Primitive Motorized" with small amounts managed as "Roaded Natural" and "Urban" under the Recreation Opportunity Spectrum.

Current facilities and future development within the area would include the following items:

1. Acquire additional land or trail easements which would facilitate trail management.
2. Install signs on roads and trails that would be available for motorized travel.
3. Design and publish a user guide (map) of the area.
4. Reconstruct or close trails or roads that exceed the Generic Soil Loss Standard established on January 1, 1991.
5. Maintain the current staging area located below Shasta Dam which features a parking area, campground, restrooms, loading ramp, site attendant, hang glider landing area and riverfront parking.
6. Expand the Shasta Campground adjacent to the OHV staging area below Shasta Dam as demand warrants.
7. Develop new trails or roads which complete loops or provide remote touring

opportunities.

8. Do not construct new motor vehicle recreation trails within critical deer winter range habitat.
9. Retain appropriate use authorizations with organizations that would develop and manage a small area below South Fork Lookout as a hang glider and paraglider launching area.

Specific recreational use restrictions within the area would include the following items:

1. Prohibit motor vehicle use on roads and trails posted as closed, or cross country travel.
2. Close existing roads and trails within the critical deer winter range to motor vehicle use between October 15 to April 1 each year.
3. Prohibit motor vehicles not meeting noise standards established under the State Vehicle Code within Sections 27200 and 38370 from the area.
4. Prohibit motor vehicles not meeting spark arrestor requirements under the State Vehicle Code from the area.
5. Limit camping to a 14 day stay on all public lands per calendar year.

C. Whiskeytown Area

The Whiskeytown Unit of the Whiskeytown/Shasta/Trinity National Recreation Area would be managed by the National Park Service emphasizing both passive and active, water-based recreation pursuits. The area would be managed mostly as "Roaded Natural" and "Semi-Primitive Motorized" with a few developed areas managed as "Urban" under the Recreation Opportunity Spectrum. Corresponding NPS classifications would include Class III (Natural Environment Area's), Class II (General Outdoor Recreation Area's), and Class I (High Density Recreation Area's).

Current facilities and future development within the ISRMA portion of the area would include the following items:

1. Maintain Whiskey Creek West which includes a five-line boat ramp, dock, 39 car/trailer paved parking spaces, 42 single car parking spaces, 16 site picnic grounds, and flush toilets.
2. Maintain Whiskey Creek East which includes three group picnic areas,

beach, vault toilets and two acre parking lot.

Specific recreational use restrictions within the ISRMA portion of the area would include the following items:

1. Allow street-legal motor vehicles only on Merry Mountain Road, Grizzly Gulch Road, South Fork Lookout Road, Tower House Access Road and Mexican Spring Road.
2. Prohibit motor vehicle use on all other roads which are not State or County roadways.
3. Prohibit camping within one mile of the lakeshore that is not within campgrounds.
4. Prohibit hunting adjacent to the Whiskey Creek Road, Pioneer Road, Bourbon Road, Scotch Road, Rye Road, Grizzly Gulch Road, and the Tower House Area.
5. Restrict motor boating adjacent to Whiskey Creek East and enforce a five mile per hour speed limit up stream from Whiskey Creek West.

This alternative includes allocations and activities identified within the "Guidance Common To All Alternatives" section, and the following guidance related to recreational resources management.

Recreational Resources Management

Recreation opportunities would be broadly segregated into four units delineated on the Alternative A Map. The units would include the Sacramento River Greenway, the Chappie-Shasta OHV Management Area, the Clear Creek Greenway, and the Iron Mountain Area.

A. *Sacramento River Greenway*

Under this alternative, the goal of recreation management for the Sacramento River Greenway would be to provide a predominantly natural appearing setting for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge and would be managed to reduce illegal activities such as garbage dumping and vagrancy. The showcase feature and marketing element of this Greenway would be a long, looping non-motorized trail system spanning the east side of Keswick Reservoir and the Sacramento River, and linking up to the existing Sacramento River Trail below Keswick Dam, and a combined use trail above Keswick Boat Ramp.

Recreational resources management would be provided by several public agencies and would emphasize river-based and non-motorized, passive recreation pursuits. Long-term strategies for the sub-units listed below and shown on the Alternative A Map include the following:

1. Improve the existing hiking trail which parallels the west side of Keswick Reservoir above Keswick Dam, and construct new trail that would link to the abandoned railroad grade below Spring Creek. Prohibit motor vehicle use on the trail. Prohibit camping and target shooting within this sub-unit.
2. Maintain existing Sacramento River Trail and related facilities (including a link towards Keswick Dam), and develop additional non-motorized feeder trails as demand warrants. Prohibit camping and target shooting within this sub-unit.
3. Enhance opportunities for a semi-primitive, non-motorized recreation experience by providing loop trail systems, parking areas and primitive facilities for hikers, mountain bike riders and/or equestrians.

4. Encourage development of a public boat ramp or primitive launch facility.
5. Develop parking areas adjacent to Walker Mine Road and install vehicle barriers to deter garbage dumping.
6. Improve directional signing to recreation facilities and enhance bicycle riding opportunities.

B. *Chappie-Shasta OHV Management Area*

Under this alternative, the goal of recreation management for the Chappie-Shasta OHV Management Area would be to provide predominantly natural, or developed settings for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature elements of challenge and ease, and would be managed to enhance opportunities for motorized dependent recreation. The showcase features and marketing elements of this area would be a regional firing range and a system of challenging loop roads and trails available for motor vehicle driving that would provide access to spectacular viewing locations, western Keswick Reservoir, and remote regions offering semi-primitive recreation experiences.

Recreational resources management would be provided by BLM, Forest Service, National Park Service, Bureau of Reclamation, with funding assistance provided through the California State Parks, Off-Highway Motor Vehicle Recreation Division. Active and passive recreation pursuits would be emphasized with large blocks of public land being accessible by motor vehicles. Long-term strategies for the sub-units listed below and shown on the Alternative A Map include the following:

1. Develop a cooperative management agreement with an organization that would manage a segment of Flat Creek as a demonstration area for gold panning and dredging. If no organization desires to cooperatively manage the area, delineate the sub-unit as a "Special Area" and operate as a recreational mineral collection area.
2. Install vehicle barriers to deter garbage dumping and prevent motor vehicle access from Iron Mountain Road to Matheson.
3. If private land is acquired by a qualified entity, support the development and management of the site as a regional firing range open to public use. Ensure that proposals incorporate safety measures, noise abatement and proper sanitation. Development proposals would require a site specific impact evaluation and mitigation plan.
4. Manage the sub-unit as a buffer to the regional firing range. For safety reasons, close and rehabilitate roads and trails leading to managed

shooting locations. Provide signing that would inform the public that a regional firing range is nearby. Prohibit camping and target shooting within the buffer area. Allow all registered motor vehicles on the abandoned railroad bed between the staging area at Keswick Boat Ramp, and Matheson.

5. Develop or retain trails and roads that complete loops open to motor vehicle use. Maintain a relatively high density network of trails that feature multiple skill levels and explore linkages that could connect with a network of roads and trails on Forest Service lands to the northeast.
6. If adequate landing spaces can be located, develop an appropriate use authorization with an organization that would manage the site as a hang glider/paraglider launching facility.
7. Retain semi-primitive, non-motorized recreation opportunities.
8. Develop or retain trails and roads that complete loops open to motor vehicle use. Develop a trailhead or staging area at the end of Whiskey Creek Road, or on National Park Service land near New York Gulch featuring access for motor vehicles that are not registered for highway use.
9. Enhance semi-primitive recreation opportunities and protect the historic Gladstone Mansion.
10. Develop or retain trails and roads that complete long distance loops open to motor vehicle use. Maintain a relatively low density network of trails and roads that feature moderate to low skill levels. To enhance semi-primitive, non-motorized recreation opportunities along Clear Creek and to prevent private property trespass, close and rehabilitate roads and trails that continue westward reaching the creek.
11. Enhance semi-primitive, motorized recreation opportunities and maintain Big Gulch Road, Stoddard Gulch Road and other existing roads and trails.
12. Enhance semi-primitive, motorized recreation opportunities and protect residential areas from private property trespass.
13. Retain street legal motor vehicle use on Merry Mountain Road and Grizzly Gulch Road. Develop no new roads and trails that would be open to motor vehicle use. Enhance existing trails and loops that provide mountain bike, hiking and equestrian opportunities.
14. Modify the Keswick boat ramp into a staging area which would include a

loading/unloading ramp for OHV's in addition to the boat ramp. Staff the staging area and boat ramp with an attendant and provide motor vehicle access north of the facility on the abandoned railroad grade. Prohibit motor vehicle use on the railroad bed south of the facility.

15. Establish a safe speed limit for the segment of Coram Road not claimed by the County via a posted speed limit or surface condition, and provide for joint motor vehicle use over County segments under 38026 of the State Vehicle Code. Improve the railroad bed into a two-wheel drive accessible road. Allow motor vehicles on the railroad bed between the Keswick boat ramp/staging area to the staging area below Shasta Dam. Prohibit camping (other than at the Shasta Campground) and target shooting within this sub-unit.
16. Develop a south to north corridor (open to motor vehicle use) that would connect the high density recreation area (sub-unit 5) with the Big Gulch area (sub-unit 10). Develop a safe crossing on East Fork Road.
17. Develop a south to north corridor (open to motor vehicle use) that would connect the Whiskey Creek area (sub-unit 8) to the Big Gulch area. Develop safe crossings on Cline Gulch Road and East Fork Road. Provide for joint motor vehicle use on County claimed portions of the American Mine Road to Shirttail Peak.
18. Install signs along East Fork Road indicating that the road is available for licensed drivers with street legal vehicles only. Discourage motor vehicle travel on East Fork Road between sub-unit 16 and sub-unit 17. Prohibit motor-vehicles that are not registered for highway use from the road.
19. Retain appropriate use authorizations with organizations that would develop and manage a small site below South Fork Lookout as a hang glider and paraglider launching site.
20. Develop a multiple use, parking and day use area at the Merry Mountain Site and provide access for all registered motor vehicles into sub-unit 8 of the Chappie-Shasta OHV Management Area.

C. Clear Creek Greenway

Under this alternative, the goal of recreation management for the Clear Creek Greenway would be to provide a predominantly natural appearing setting for people where there would be only moderate evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge and would be managed to reduce motor vehicle traffic within the community of French Gulch and along East Fork Road. The showcase feature

and marketing element of this Greenway would be a corridor of undeveloped terrain linked together with a series of non-motorized trails adjacent to Clear Creek.

Recreational resources would be managed by BLM and the National Park Service emphasizing passive recreational pursuits. Public agencies may seek the assistance of local government and user groups to develop various recreational facilities. Long-term strategies for the sub-units listed below and shown on the Alternative A Map include the following:

1. Install signs on East Fork Road indicating that the road is available only for street legal vehicles.
2. Enhance semi-primitive, non-motorized recreation opportunities along Clear Creek by developing or retaining trails for mountain bike riders, hikers and equestrians.

D. Iron Mountain Area

BLM and Bureau of Reclamation lands affected by acid mine drainage may be available for exchange if the action would enhance remedial efforts. Long-term strategies for the unit shown on the Alternative A Map include the following:

1. Retain or acquire public access on road north of South Fork Lookout and prevent public access to facilities constructed to treat acid mine drainage.

Alternative B

This alternative includes allocations and activities identified within the "Guidance Common To All Alternatives" section, and the following guidance related to recreational resources management.

Recreational Resources Management

Recreational opportunities would be broadly segregated into four units delineated on the Alternative B Map. The units would include the Sacramento River Greenway, the Chappie-Shasta OHV Management Area, the Clear Creek Greenway, and the Iron Mountain Area.

A. *Sacramento River Greenway*

Under this alternative, the goal of recreation management for the Sacramento River Greenway would be to provide a predominantly natural or developed setting for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge, and would be managed to reduce illegal activities such as garbage dumping and vagrancy. The showcase features and marketing elements of this Greenway would be a regional firing range and a looping system of non-motorized trails linking together the Sacramento River Trail below Keswick Dam with a combined use trail above Matheson.

Recreational resources management would be provided by several public agencies and would emphasize river-based, passive recreation pursuits and some upland, active recreation pursuits. Long-term strategies for the sub-units listed below and shown on the Alternative B Map include the following:

1. Develop a cooperative management agreement with an organization that would manage a segment of Flat Creek as a demonstration area for gold panning and dredging. If no organization desires to cooperatively manage the area, delineate the sub-unit as a "Special Area" and operate as a recreational mineral collection area.
2. Develop parking areas adjacent to Iron Mountain Road and install vehicle barriers to deter garbage dumping.
3. Improve Matheson Road to accommodate two-wheel drive vehicles and develop a staging area along the railroad bed. Prohibit motor vehicles on the abandoned railroad bed south of the Matheson staging area.
4. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining non-motorized trails which complete loops for

mountain bike, hiking and equestrian users, and provide several trails that would connect to the abandoned railroad bed. Prohibit camping and target shooting within this sub-unit. Prohibit motor vehicle use on the railroad bed (excluding parking) between the Keswick Boat Ramp and the Matheson staging area.

5. Maintain existing Sacramento River Trail and related facilities (including a link towards Keswick Dam), and develop additional non-motorized feeder trails as demand warrants. Prohibit camping and target shooting within this sub-unit.
6. Seek proposals from a qualified organization that would develop and manage the site as a regional firing range open to public use. Ensure that proposals incorporate safety measures, noise abatement and proper sanitation. Development proposals would require a site specific impact evaluation and mitigation plan. If a proposal meets all criteria, develop an appropriate authorization with a qualified organization that would develop and manage the site.
7. Manage the sub-unit as a buffer to the regional firing range. For safety purposes, close and rehabilitate roads and trails leading to managed shooting locations. Provide signing that would inform the public that a regional firing range is nearby. Prohibit camping and target shooting within the buffer area.
8. Develop parking areas adjacent to Walker Mine Road and install vehicle barriers to deter garbage dumping.
9. Encourage development of a public boat ramp or primitive launch facility.
10. Enhance opportunities for a semi-primitive, non-motorized recreation experience by developing loop trails, parking areas and primitive facilities for hikers, mountain bike riders and equestrians.
11. Improve directional signing to recreational facilities and enhance bicycle riding opportunities.
12. Retain semi-primitive, non-motorized recreation opportunities.
13. Improve the existing hiking trail which parallels the west side of Keswick Reservoir above Keswick Dam and construct new trail that would link to the abandoned railroad grade below Spring Creek. Prohibit motor vehicle use on the trail. Prohibit camping and target shooting within this sub-unit.

B. Chappie-Shasta OHV Management Area

Under this alternative, the goal of recreation management for the Chappie-Shasta OHV Management Area would be to provide a predominantly natural appearing setting for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature elements of challenge and ease, and would be managed to enhance opportunities for motorized dependent recreation. The showcase feature and marketing element of this area would be a system of challenging loop roads and trails available for motor vehicle driving that would provide access to spectacular viewing locations and remote regions offering semi-primitive recreation experiences.

Recreational resources management would be provided by BLM, Forest Service, National Park Service, Bureau of Reclamation, with funding assistance provided through the California State Parks, Off-Highway Motor Vehicle Recreation Division. Active and passive recreation pursuits would be emphasized with large blocks of public land being accessible by motor vehicles. Long-term strategies for the sub-units listed below and shown on the Alternative B Map include the following:

1. Develop or retain trails and roads that complete loops open to motor vehicle use. Maintain a relatively high density network of trails that feature multiple skill levels and explore linkages that could connect with a network of roads and trails on Forest Service lands to the northeast.
2. Establish a safe speed limit for the County claimed segment of Coram Road and provide for combined motor vehicle use under 38026 of the State Vehicle Code. Improve the railroad bed into a two-wheel drive accessible road between Matheson and the staging area below Shasta Dam and reduce speeds through a combination of surface condition or posted limits. Ensure the safe transition for trail users connecting with the railroad bed. Prohibit camping (other than at the Shasta Campground) and target shooting within this sub-unit.
3. Develop trails and roads that complete loops open to motor vehicle use. Develop a trailhead or staging area at the end of Whiskey Creek Road, or on National Park Service land near New York Gulch featuring access for all registered motor vehicles.
4. If adequate landing spaces are available, develop an appropriate use authorization with an organization that would manage the site as a hang glider/paraglider launching facility.
5. Develop or retain trails and roads that complete long distance loops open to all registered motor vehicles. Retain a relatively low density network of

trails and roads that feature moderate to low skill levels. To enhance semi-primitive, non-motorized recreation opportunities along Clear Creek and to prevent private property trespass, close and rehabilitate roads and trails that continue westward reaching the creek.

6. Retain appropriate use authorizations with organizations that would develop and manage a small site below South Fork Lookout as a hang glider and paraglider launching site.

C. *Clear Creek Greenway*

Under this alternative, the goal of recreation management for the Clear Creek Greenway would be to provide a predominantly natural appearing setting for people where there would be only moderate evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge and would be managed to reduce motor vehicle traffic within the community of French Gulch and along East Fork Road. The showcase feature and marketing element of this Greenway would be a vast area of undeveloped terrain served by a sparse network of motor vehicle access routes along some ridges, and non-motorized trails adjacent to Clear Creek.

Recreational resources would be managed by BLM and the National Park Service emphasizing passive recreational pursuits. Public agencies may seek the assistance of local government and user groups to develop various recreational facilities. Long-term strategies for the sub-units listed below and shown on the Alternative B Map include the following:

1. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining trails for mountain bike riders, hikers and/or equestrians. To reduce traffic on East Fork Road, prohibit motor vehicles on the short road segment that connects East Fork Road to Shirttail Peak. Retain street legal motor vehicle use over Grizzly Gulch Road and Merry Mountain Road only.
2. Enhance semi-primitive, non-motorized recreation opportunities and protect historic values associated with the Gladstone Mansion.
3. Develop a south to north corridor open to motor vehicle use that would connect sub-units 1 and 3 of the Chappie-Shasta OHV Management Area to Shirttail Peak. Ensure a safe crossing of Cline Gulch Road and designate portions County claimed segments of the American Mine Road for joint use.
4. Install signs on East Fork Road indicating that road is available only for street legal vehicles.

5. Develop a south to north corridor open to motor vehicle use that would connect the high density recreation area (sub-unit 1 of the Chappie-Shasta OHV Management Area) with the Big Gulch area (sub-unit 5 of the Chappie-Shasta OHV Management Area). Develop a safe crossing on East Fork Road.
6. Develop no new roads or trails that would be available for motorized recreation other than road realignments that might be required for resource protection or visitor safety. To enhance semi-primitive recreation opportunities along Clear Creek and to prevent private property trespass, close and rehabilitate roads and trails that lead from sub-unit 5 of the Chappie-Shasta OHV Management Area to the creek.
7. Maintain Big Gulch Road and Stoddard Gulch Road and develop no new road and trail segments that would be available for motorized recreation other than road realignments that might be required for resource protection and visitor safety .
8. Develop a multiple use, parking and day use area at the Merry Mountain site and provide access for all registered motor vehicles into Sub-unit 3 of the Chappie-Shasta OHV Management Area.

D. Iron Mountain Area

BLM and Bureau of Reclamation lands affected by acid mine drainage may be available for exchange if the action would enhance remedial efforts. Long-term strategies for the unit shown on Alternative B Map include the following:

1. Retain or acquire public access on road north of South Fork Lookout and prevent public access to facilities constructed to treat acid mine drainage.

This alternative includes allocations and activities identified within the "Guidance Common To All Alternatives" section, and the following guidance related to recreational resources management.

Recreational Resources Management

Recreation opportunities would be broadly segregated into four units delineated on the Alternative C. The units would include the Sacramento River Greenway, the Chappie-Shasta OHV Management Area, the Clear Creek Greenway, and the Iron Mountain Area.

A. *Sacramento River Greenway*

Under this alternative, the goal of recreation management for the Sacramento River Greenway would be to provide a predominantly natural appearing setting for people where there would be only moderate evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge, and would be managed to reduce illegal activities such as garbage dumping and vagrancy. The showcase feature and marketing element of this Greenway would be a long, looping non-motorized trail system circling both sides of Keswick Reservoir and the Sacramento River, and linking up to the existing Sacramento River Trail below Keswick Dam.

Recreational resources management would be provided by several public agencies and would emphasize river-based and non-motorized, passive recreation pursuits. Long-term strategies for the sub-units listed below and shown on the Alternative C Map include the following:

1. Develop a cooperative management agreement with an organization that would manage a segment of Flat Creek as a demonstration area for gold panning and dredging. If no organization desires to cooperatively manage the area, delineate the sub-unit as a "Special Area" and operate as a recreational mineral collection area.
2. Develop parking areas adjacent to Iron Mountain Road and install vehicle barriers to deter garbage dumping.
3. Develop or retain non-motorized trails which complete loops for mountain bike, hiking and/or equestrian users and provide several trails that would connect to the abandoned railroad bed. Develop two-wheel drive access over Matheson Road and a parking area along the railroad bed. Prohibit camping and target shooting within this sub-unit. Prohibit motor vehicle use on the railroad bed (excluding parking) between the Keswick Boat Ramp and Matheson.

4. Develop or retain non-motorized trails which complete loops for mountain bike, hiking and equestrian users with several trails connecting Coram Road to the abandoned railroad bed. Develop a site specific plan and environmental analysis for a separate staging area on Bureau of Reclamation lands south of the OHV Staging Area to serve non-motorized trail users on the abandoned railroad bed. Maintain the southern portion of Coram Road for four-wheel drive accessibility and provide for parking at Motion Creek above the railroad bed. Prohibit camping (other than within the Shasta Campground) and target shooting within this sub-unit. Once alternative access routes are secured for OHV users along the Coram Road area, prohibit motor vehicle use on the abandoned railroad bed between Matheson and the staging area below Shasta Dam.
5. Retain semi-primitive, non-motorized recreation opportunities.
6. Improve directional signing to recreational facilities and enhance bicycle riding opportunities.
7. Encourage development of a public boat ramp or primitive launch facility.
8. Develop parking areas adjacent to Walker Mine Road and install vehicle barriers to deter garbage dumping.
9. Enhance opportunities for a semi-primitive, non-motorized recreation experience by providing loop trail systems, parking areas and primitive facilities for hikers, mountain bike riders and equestrians.
10. Improve the existing hiking trail which parallels the west side of Keswick Reservoir above Keswick Dam, and construct new trail that would link to the abandoned railroad grade below Spring Creek. Prohibit motor vehicle use on the trail. Prohibit camping and target shooting within this sub-unit.
11. Maintain existing Sacramento River Trail and related facilities (including a link towards Keswick Dam), and develop additional (non-motorized) feeder trails as demand warrants. Prohibit camping and target shooting within this sub-unit.

B. Chappie-Shasta OHV Management Area

Under this alternative, the goal of recreation management for the Chappie-Shasta OHV Management Area would be to provide a predominantly natural appearing setting for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature elements of challenge and ease, and would be managed to enhance opportunities for motorized dependent recreation. The showcase feature and

marketing element of this area would be a system of challenging loop roads and trails available for motor vehicle driving that would provide access to spectacular viewing locations and remote regions offering semi-primitive recreation experiences.

Recreational resources management would be provided by BLM, Forest Service, National Park Service and Bureau of Reclamation with funding assistance provided through the California State Parks, Off-Highway Motor Vehicle Recreation Division. Active and passive recreation pursuits would be emphasized with large blocks of public land being accessible by motor vehicles. Long-term strategies for the sub-units listed below and shown on the Alternative C Map include the following:

1. Develop or retain trails and roads that complete loops open to motor vehicle use. Maintain a relatively high density network of trails that feature multiple skill levels and explore linkages that could connect with a network of roads and trails on Forest Service lands to the northeast. Ensure the safe transition for trail users connecting with the Coram Road segment not claimed by the County which would be maintained for four-wheel drive use. Establish a safe speed limit for the County claimed segment of Coram Road and provide for joint motor vehicle use under 38026 of the State Vehicle Code.
2. If adequate landing sites can be located, develop an appropriate use authorization with an organization that would manage the site as a hang glider/paraglider launching facility.
3. Develop or retain trails and roads that complete loops open to motor vehicle use. Develop a trailhead or staging area at the end of Whiskey Creek Road, or on National Park Service land near New York Gulch featuring access for all registered motor vehicles.
4. Develop or retain trails and roads that complete long distance loops open to motor vehicle use. Maintain a relatively low density network of trails that feature moderate to low skill levels. To enhance semi-primitive, non-motorized recreation opportunities along Clear Creek and to prevent private property trespass, close and rehabilitate roads and trails that continue westward and reach the creek.
5. Retain appropriate use authorizations with organizations that would develop and manage a small site below South Fork Lookout as a hang glider and paraglider launching site.
6. Develop or retain a road that would be open to motor vehicle use and connect West Shirt Peak to a loop trail system located around Shirttail

Peak.

C. *Clear Creek Greenway*

Under this alternative, the goal of recreation management for the Clear Creek Greenway would be to provide a predominately natural appearing setting for people where there would be only moderate evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge, and would be managed to reduce motor vehicle traffic within the community of French Gulch and along East Fork Road. The showcase feature and marketing element of this Greenway would be a vast area of undeveloped terrain served by a sparse network of motor vehicle access routes along some ridges, and non-motorized trails along Clear Creek.

Recreational resources would be managed by BLM, Forest Service and National Park Service emphasizing passive recreational pursuits. Public agencies may seek the assistance of local government and user groups to develop various recreational facilities. Long-term strategies for the sub-units listed below and shown on the Alternative C Map include the following:

1. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining loop trails for mountain bike riders, hikers and equestrians. Allow street legal motor vehicle use only on Grizzly Gulch Road and Merry Mountain Road.
2. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining loops for mountain bike riders, hikers and equestrians.
3. Enhance the opportunity to have a semi-primitive, non-motorized recreation experience along Cline Gulch Road, East Fork Road, and Shirttail Peak by retaining street legal motor vehicle access only over the existing County road that terminates at the Old American Mine. Prohibit motor vehicle use on other roads reaching Shirttail Peak from East Fork Road or Cline Gulch Road.
4. Maintain Big Gulch Road and Stoddard Gulch Road and develop no new roads or trails that would be available for motorized recreation other than road realignments that might be required for resource protection or visitor safety.
5. Enhance the opportunity to have a semi-primitive recreation experience by developing or retaining parking areas along Cline Gulch Road. Install signs along Cline Gulch Road indicating that the road is available for street legal vehicles only. Prohibit unlicensed drivers and/or motor vehicles that are not

registered for highway use on the road.

6. Install signs along East Fork Road indicating that the road is available only for street legal vehicles. Prohibit unlicensed drivers and/or motor vehicles that are not registered for highway use on the road.
7. Enhance semi-primitive, non-motorized recreation opportunities by developing a parking and day use area at the Merry Mountain Site. Manage the road that loops above Merry Mountain and connects with this site as a non-motorized trail.

D. Iron Mountain Area

BLM and Bureau of Reclamation lands affected by acid mine drainage may be available for exchange if the action would enhance remedial efforts. Long-term strategies for the unit shown on the Alternative C Map include the following:

1. Retain or acquire public access on road north of South Fork Lookout and prevent public access to facilities constructed to treat acid mine drainage.

This alternative includes allocations and activities identified within the "Guidance Common To All Alternatives" section, and the following guidance related to recreational resources management.

Recreational Resources Management

Recreational opportunities would be broadly segregated into four units delineated on the Alternative D Map. The units would include the Sacramento River Greenway, the Chappie-Shasta OHV Management Area, the Clear Creek Greenway, and the Iron Mountain Area.

A. *Sacramento River Greenway*

Under this alternative, the goal of recreation management for the Sacramento River Greenway would be to provide a predominately natural setting for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature elements of challenge and ease, and would be managed to reduce illegal activities such as garbage dumping and vagrancy. The showcase features and marketing elements of this Greenway would be regional firing range and a long, looping, predominantly non-motorized trail system circling both sides of Keswick Reservoir and the Sacramento River, and linking up to the existing Sacramento River Trail below Keswick Dam.

Recreational resources management would be provided by several public agencies and would emphasize river-based, passive recreation pursuits. Long-term strategies for the sub-units listed below and shown on the Alternative D Map include the following:

1. Develop a cooperative management agreement with an organization that would manage a segment of Flat Creek as a demonstration area for gold panning and dredging. If no organization desires to cooperatively manage the area, delineate the sub-unit as a "Special Area" and operate as a recreational mineral collection area.
2. Develop parking areas adjacent to Iron Mountain Road and install vehicle barriers to deter garbage dumping.
3. Develop or retain non-motorized trails which complete loops for mountain bike, hiking and equestrian users and provide several trails that would connect to the abandoned railroad bed. Develop two-wheel drive access down Matheson Road and a parking area along the railroad bed. Prohibit camping within this sub-unit and target shooting. Prohibit motor vehicle use

on the railroad bed between the Keswick Boat Ramp and the Matheson parking area.

4. Develop or retain non-motorized trails which complete loops for mountain bike, hiking and equestrian users with several trails connecting Coram Road to the abandoned railroad bed. Develop site specific plan and environmental analysis for a separate staging area on Bureau of Reclamation land south of the OHV Staging Area to serve non-motorized trail users on the abandoned railroad bed. Maintain the southern portion of Coram Road for four-wheel drive accessibility and provide for parking at Motion Creek above the railroad bed. Prohibit camping (other than at the Shasta Campground) and target shooting within this sub-unit. Once alternative access routes are secured for OHV users along the Coram Road area, prohibit motor vehicle use on the abandoned railroad bed between Motion Siding and the staging area below Shasta Dam.
5. Retain semi-primitive, non-motorized recreation opportunities.
6. Improve directional signing to recreational facilities and enhance bicycle riding opportunities.
7. Encourage development of a public boat ramp or primitive launch facility.
8. Develop parking areas adjacent to Walker Mine Road and install vehicle barriers to deter garbage dumping.
9. Enhance opportunities for a semi-primitive, non-motorized recreation experience by providing loop trail systems, parking areas and primitive facilities for hikers, mountain bike riders and equestrians. For safety purposes, close and rehabilitate roads and trails leading to managed shooting locations within the regional firing range. Provide signing that would inform the public that a regional firing range is nearby. Prohibit camping and target shooting within this sub-unit.
10. Improve the existing hiking trail which parallels the west side of Keswick Reservoir above Keswick Dam and construct new trail that would link to the abandoned railroad grade below Spring Creek. Prohibit motor vehicle use on the trail. Prohibit camping and target shooting within this sub-unit.
11. Maintain existing Sacramento River Trail and related facilities (including a link towards Keswick Dam), and develop additional (non-motorized) feeder trails as demand warrants. Prohibit camping and target shooting within this sub-unit.

12. Develop two-wheel drive access along the railroad bed between the Matheson parking area to Motion Siding. Develop a parking area at Motion Siding and prohibit motor vehicle use along the railroad bed north of this parking area. Prohibit camping and target shooting within this sub-unit.
13. Seek proposals from a qualified organization that would develop and manage the site as a regional firing range open to public use. Ensure that proposals incorporate safety measures, noise abatement and proper sanitation. Development proposals would require a site specific impact evaluation and mitigation plan. If a proposal meets all criteria, develop an appropriate authorization with a qualified organization that would develop and manage the site.

B. Chappie-Shasta OHV Management Area

Under this alternative, the goal of recreation management for the Chappie-Shasta OHV Management Area would be to provide a predominantly natural appearing setting for people where there would be moderate to noticeable evidence of the sights and sounds of other people. Access to the natural environment would feature elements of challenge and ease, and would be managed to enhance opportunities for motorized dependent recreation. The showcase feature and marketing element of this area would be a system of challenging loop roads and trails available for motor vehicle driving that would provide access to spectacular viewing locations and remote regions offering semi-primitive recreation experiences.

Recreational resources management would be provided by BLM, Forest Service, National Park Service and Bureau of Reclamation with funding assistance provided through the California State Parks, Off-Highway Motor Vehicle Recreation Division. Active and passive recreation pursuits would be emphasized with large blocks of public land being accessible by motor vehicles. Long-term strategies for the sub-units listed below and shown on the Alternative D Map include the following:

1. Develop or retain trails and roads that complete loops open to motor vehicle use and explore linkages that could connect with a network of roads and trails on Forest Service lands to the northeast. Maintain a relatively high density network of trails that feature multiple skill levels. Ensure the safe transition for trail users connecting with the Coram Road segment not claimed by the County which would be maintained for four-wheel drive use. Establish a safe speed limit for the County claimed segment of Coram Road and provide for joint motor vehicle use under 38026 of the State Vehicle Code.
2. If adequate landing spaces can be located, develop an appropriate use authorization with an organization that would manage the site as a hang glider/paraglider launching facility.

3. Develop or retain trails and roads that complete loops open to motor vehicle use. Develop a trailhead or staging area at the end of Whiskey Creek Road, or on National Park Service land near New York Gulch featuring access for all registered motor vehicles.
4. Develop or retain trails and roads that complete long distance loops open to motor vehicle use. Maintain a relatively low density network of trails that feature moderate to low skill levels. To enhance semi-primitive, non-motorized recreation opportunities along Clear Creek and to prevent private property trespass, close and rehabilitate roads and trails that continue westward reaching the creek.
5. Retain appropriate use authorizations with organizations that would develop and manage a small site below South Fork Lookout as a hang glider and paraglider launching site.
6. Develop a south to north corridor (open to all registered motor vehicles) that would connect the Whiskey Creek area (sub-unit 3) and the high density recreation area (sub-unit 1) to the Big Gulch area (sub-unit 4). Develop safe crossings on Cline Gulch Road and East Fork Road. Provide for joint motor vehicle use on County claimed portions of the American Mine Road to Shirttail Peak.
7. Enhance semi-primitive recreation opportunities and protect the historic Gladstone Mansion.
8. Maintain Big Gulch Road and Stoddard Gulch Road and develop no new road and trail segments that would be available for motorized recreation other than road realignments that might be required for resource protection or visitor safety.
9. Install signs along East Fork Road indicating that the road is available only for licensed drivers with street legal vehicles. Prohibit motor vehicles that are not registered for highway use on the road.
10. Retain primitive recreation opportunities and develop no new roads or trails that would be available for motorized recreation other than road realignments that might be required for resource protection and visitor safety.
11. Develop a south to north corridor (open to motor vehicle use) that would connect the high density recreation area (sub-unit 1) with the Big Gulch area (sub-unit 4). Develop a safe crossing on East Fork Road.

C. Clear Creek Greenway

Under this alternative, the goal of recreation management for the Clear Creek Greenway would be to provide a predominantly natural appearing setting for people where there would be only moderate evidence of the sights and sounds of other people. Access to the natural environment would feature an element of challenge and would be managed to reduce motor vehicle traffic within the community of French Gulch and along East Fork Road. The showcase feature and marketing element of this Greenway would be a corridor of undeveloped terrain linked together with a series of non-motorized trails adjacent to Clear Creek.

Recreational resources would be managed by BLM, Forest Service and National Park Service emphasizing passive recreational pursuits. Public agencies may seek the assistance of local government and user groups to develop various recreational facilities. Long-term strategies for the sub-units listed below and shown on the Alternative D Map include the following:

1. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining trails for mountain bike riders, hikers and/or equestrians. Retain street legal vehicle use on Grizzly Gulch Road and Merry Mountain Road only.
2. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining trails that complete loops for mountain bike riders, hikers and/or equestrians.
3. Enhance semi-primitive, non-motorized recreation opportunities by developing or retaining trails which complete loops for mountain bike riders, hikers and/or equestrians.
4. Install signs along Cline Gulch Road indicating that the road is available only for licensed drivers with street legal vehicles. Discourage motor vehicle traffic from the loop road system within sub-unit 6 of the Chappie-Shasta OHV Area.
5. Install signs along East Fork Road indicating that the road is available only for licensed drivers with street legal vehicles. Prohibit motor vehicles that are not registered for highway use on the road.
6. Enhance semi-primitive, non-motorized recreation opportunities by developing a staging area at the Merry Mountain Site, and provide street-legal motor vehicle access only into sub-unit 3 of the Chappie-Shasta OHV Management Area.

D. Iron Mountain Area

BLM and Bureau of Reclamation lands affected by acid mine drainage may be available for exchange if the action would enhance remedial efforts. Long-term strategies for the unit shown on the Alternative D Map include the following:

1. Retain or acquire public access on road north of South Fork Lookout and prevent public access to facilities constructed to treat acid mine drainage.

Rationale For The Preferred Alternative

Alternative D has been identified as the Preferred Alternative under a consensus recommendation of the BLM, Forest Service, National Park Service, and Bureau of Reclamation. Although this alternative is the one that those Federal agencies believe best addresses the issues that have been identified by planning participants and accommodates the various public demands on current and future Federal lands within the ISRMA, the reader should be aware that this plan is a DRAFT plan only. Following comment on this draft plan and environmental impact statement, a proposed action will be developed and released within a FINAL plan and environmental impact statement. The proposed action within the FINAL plan could contain compatible elements within each of the alternatives.

Guidance common to all alternatives and specific measures within Alternative D seem to best accommodate recreation demands, wildlife needs, and socio-cultural-economic considerations on Federal lands within the ISRMA and within the region as a whole.

Recreation Demands: If necessary private lands are acquired and Alternative D is implemented by all Federal agencies, the alternative could lead to a diverse blend of high quality recreation opportunities, and a high rate of overall recreation use (616,000 to 774,000 annual visits). Quality recreation opportunities are provided under Alternative D by using a zoning concept where the landscape and recreation activities occurring on that landscape are carefully considered. Although this alternative attempts to blend many recreation activities and uses together, care is taken to provide compatibility where one type of recreation use is expected to be great over the same area.

If implemented, the Alternative D could lead to increased and safer opportunities for OHV recreationists, hikers, runners, mountain bike riders, and equestrians. Opportunities for these activities are expanded by acquiring land, developing loop trails and roads, developing access points and segregating recreation activities within high use areas that may be incompatible. Visitor safety would be improved through signing, providing information at access points, prohibiting target shooting within potential high use recreation areas, and developing a regional firing range.

OHV Recreation opportunities would be expanded by providing new access points into the ISRMA from New York Gulch and/or Whiskey Creek. These access points would reduce traffic along East Fork Road and Cline Gulch Road which are currently used to reach roads and trails within the OHV Area. An existing network of 210 miles of available road and trail would be augmented with about 14 miles of new construction. Special attention would be made to complete loop systems, and available roads and trails would be signed for vehicle suitability and skill levels. OHV opportunities would also improve because available roads and trails within the winter range for the Whiskeytown deer herd would not be closed to motor vehicle travel between October 15 to April 1 each year (reference No Action Alternative).

Although most OHV related marketing efforts would focus on roads and trails within the boundaries of the Chappie-Shasta OHV Management Area, special care would be taken to reduce traffic along East Fork Road and Cline Gulch Road. Two south to north corridors (or byways) would greatly ease the flow of motor vehicle traffic and tie together large tracts of public land. By developing these corridors, traditional access routes (i.e. Cline Gulch Road and East Fork Road) would no longer be required to reach trail systems to the south or north of those County maintained roads.

There continues to be a growing demand for OHV related recreation (reference California Outdoor Recreation Plan, 1993) and the Chappie-Shasta OHV Management Area is the only recreation area that emphasizes OHV recreation that is marketed within Shasta County. The Chappie-Shasta OHV Area was supported by a Shasta County Resolution in 1984 and about 3.6 million dollars has been spent by the California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division to assist BLM and the Forest Service in the acquisition of nearly 13,500 acres within this recreation area. This area would continue to draw OHV recreationists from around the state, and would direct OHV use away from highly erosive locations nearby (e.g. Grass Valley Creek watershed).

Although most of the railroad bed adjacent to Keswick Reservoir would be unavailable for motor vehicle driving, County maintained segments of Coram Road would be designated for joint use and other segments of this road would be retained under a four-wheel drive standard. The railroad bed has never been a featured trail of the Chappie-Shasta OHV Area, and BLM has not spent any grant money appropriated through the California State Park, OHMVR Division to manage this trail.

Hiking, running, mountain bike riding and equestrian opportunities would be expanded greatly by offering a limited amount of high quality trail systems closed to motor vehicle travel. The popular Sacramento River Trail would be extended all the way towards Shasta Dam on the east and west margins of Keswick Reservoir and access points to this trail system would be provided at Shasta Dam, Motion Creek (four-wheel drive access only), Motion Siding, Matheson, Keswick Boat Ramp, Walker Mine Road and current access points below Keswick Dam. Existing trail uses over the Belt Line Road on the east side of Keswick Reservoir would likely fit in well with such a concept.

Although prohibiting motor vehicles from driving over most of the abandoned railroad bed adjacent to Keswick Reservoir would be objectionable to many individuals who currently drive on the bed, conversion of this bed into a non-motorized trail appears to be desired by a majority of current and future ISRMA recreationists. Research conducted by the Forest Service's Pacific Southwest Range and Experiment Station (reference Visitor Research Case Study: The Redding Resource Area Final Report, 1995) indicated that current ISRMA visitors tended to favor non-motorized trail development between Keswick Dam and Shasta Dam (56 percent) as opposed to motorized trail development (10 percent). Research with focus groups during development of the Strategic Marketing Plan

For Northern California Tourism and Outdoor Recreation (1995) seems to support this finding. The second most important need in the Redding area identified by the focus group was the development of a greenbelt between Redding and Shasta Dam. Although not explicitly defined, the greenbelt most likely referred to trail uses depicted in Shasta County's plan entitled, Sacramento River Greenway: A Rails-To-Trails Master Plan (1991) which called for the conversion of the railroad bed into a non-motorized trail. Finally, extension of the non-motorized, Sacramento River Trail towards Shasta Dam was encouraged by the Recreational Trails Committee of the California State Parks and Recreation under Resolution 93-6.

Opportunities for hiking, running, mountain bike riding and equestrian use would also improve near Clear Creek and Whiskeytown Lake with the development of a day-use area at the Merry Mountain Site and new non-motorized trail systems. Many residents in the community of French Gulch seem to favor development of additional non-motorized trails that might link with the existing network of non-motorized trails within the Whiskeytown Unit of the National Recreation Area (reference A Statement of Community Opposition to the Coggins Mill Off-Highway Vehicle Staging Area, 1994). If input from this community during scoping meetings for this planning effort is indicative of this level of demand, then there appears to be an enormous amount of unrealized demand.

Fishing opportunities would remain about the same with most fishing use occurring on Shasta and Whiskeytown reservoirs. Opportunities to fish along the western banks of Keswick Reservoir would continue to be offered via motor vehicle access by providing two-wheel drive access down Matheson Road and a segment of the railroad bed, and developing a parking area near Motion Siding. Another popular fishing spot near Motion Creek would be accessible via four-wheel drives by traveling down Coram Road to a parking area above the railroad bed.

Target Shooting opportunities would be displaced along most of the western side of Keswick Reservoir and along Iron Mountain Road, but is necessary to ensure a safe experience for trail users on the railroad bed, and to enhance a peaceful river-trail setting. Development of a regional firing range on the east side of Keswick Reservoir above Walker Mine Road would be a great asset to the community. City and County law enforcement officials have documented 47 sites within Shasta County that are currently used by target shooters. None of these sites are County-approved, and all are unsafe.

A public range is needed for several reasons. One reason is that a public range is needed to satisfy the Hunter Safety Course required by the California Department of Fish and Game in order to obtain a hunting license. Another reason is that popular target shooting areas have been systematically closed due to urban encroachment (e.g. Benton Ranch), recreational development (e.g. Shasta OHV Staging Area), or safety reasons (e.g. BLM lands within the Horsetown/Clear Creek Nature Preserve along Clear Creek Road).

With the extension of the Sacramento River Trail towards Shasta Dam, several informal shooting areas would be lost. Two flats adjacent to the railroad grade would be closed to shooting as would the popular locations adjacent to Iron Mountain Road. Without an alternative site to send target shooters into, this use would likely be displaced to other undesirable locations. When the OHV Staging Area was developed, a very popular shooting site was displaced. Many of these target shooters have found shooting along the railroad bed, Iron Mountain Road, private land along Clear Creek Road, and BLM land near Swasey Drive a convenient alternative. By developing a regional firing range above Walker Mine Road, target shooting use at these alternative locations would greatly decline. Many of these areas may be appropriate to close to target shooting once a regional site is developed.

Although the regional firing range would likely disrupt the peaceful setting of eastern Keswick Reservoir and portions of the railroad bed above Keswick Boat Ramp, noise from target shooting use in these areas is a common occurrence. The site considered for development is currently used by several hundred target shooters each year, formalizing this use into a managed range would improve safety and ensure noise abatement.

Wildlife Needs: If adopted by all Federal agencies, Desired Plant Communities (DPC's) established for the ISRMA satisfy habitat requirements for wildlife species dependent upon early successional vegetation (e.g. Whiskeytown deer herd), late successional vegetation (e.g. northern spotted owl), and riparian vegetation (e.g. Foothill yellow-legged frog). Achieving DPC's would also reduce fuel loadings, provide adequate cover for the protection of soil resources and allow for a sustained supply of forest products from available, productive forest lands. Furthermore, adherence to standards and guidelines for riparian management and the establishment of riparian reserves would protect habitat for anadromous fish (e.g. Chinook salmon) and resident fish (e.g. rainbow trout).

Motor vehicle use levels and conditions of the Whiskeytown deer herd would be closely monitored during the wintering period. If herd conditions decline and are related to motor vehicle related stress, limits would be imposed on the number of motor vehicles that would be allowed over roads and trails between November 15 to April 15. It was once speculated that motor vehicles needed to be prohibited altogether from roads and trails within the critical winter range between October 15 to April 1 each year (reference the No Action Alternative). Research conducted for the California Department of Fish and Game (reference Rock Creek, Off-Road Vehicle/Deer Study, 1991), and by San Jose State University (reference Responses of Black-Tailed Deer to Off-Highway Vehicles in Hollister Hills State Vehicular Recreation Area, Hollister, California, 1989) indicate that deer may be able to tolerate various levels of OHV use without measurable impacts to the herd.

Socio-cultural-economic needs: If considered by all Federal agencies during project planning, the Inventory of Visual Quality Objectives map establishes thresholds that would ensure proper protection of unique landscapes and important viewsheds. Guidance to

Alternative D also provides a unique mix of recreation opportunities that could lead to a high level of economic return to local businesses and Shasta County as a whole. This alternative could cause visitors within the ISRMA to spend approximately 7.4 to 9.3 million dollars each year. Because money associated with this spending tends to get respent before it leaves the community, this alternative could represent as much as 24.1 million dollars of community spending each year.

Alternative Comparison

Each land-use alternative provides a unique mix of solutions that were formulated to address the issues identified within Chapter One. If fully implemented, each alternative may have different consequences on the natural and social environment. Select consequences of fully implementing the various alternatives are disclosed within Table 2.3.

Table 2.3
Comparison of Alternatives

Resource Value or Opportunity	Unit of Measure	No Action Alternative (baseline)	Alternative A	Alternative B	Alternative C	Alternative D
Recreation Opportunities: OHV recreation Touring Hiking and Running Bike Riding Fishing Hunting Equestrian Use Hang Gliding or Paragliding Waterskiing or Jetskiing Target Shooting	expected annual visits	43,000-55,000 200,000-250,000 106,000-150,000 97,000-140,000 27,500-32,500 approx. 1,500 approx. 1,500 200-500 18,000-19,000 500-1,000	66,500-78,500 SAME 125,000-169,000 127,000-170,000 27,500-29,500 SAME 1,000-2,000 SAME SAME 5,000-10,000	64,500-76,500 SAME 131,500-175,500 131,000-174,000 27,500-29,500 SAME 1,000-2,000 SAME SAME 5,000-10,000	56,500-68,500 SAME 170,000-214,000 140,000-183,000 26,500-27,500 SAME 1,500-2,500 SAME SAME 300-500	63,500-75,500 SAME 163,500-207,500 135,000-178,000 27,500-29,500 SAME 1,500-2,000 SAME SAME 5,000-10,000
Economic Impact: Visitor Spending Community Spending	millions of dollars	5.9 to 7.8 15.3 to 20.3	6.9 to 8.8 17.9 to 22.9	7.0 to 8.9 18.2 to 23.1	7.4 to 9.2 19.2 to 23.9	7.4 to 9.3 19.2 to 24.1
Traffic on Select Roads: Cline Gulch Rd. Coram Rd. above Staging Coram Rd. below Staging East Fork Rd. Highway 151 segment Iron Mountain segment 1 Iron Mountain segment 2 Keswick Lake Ramp Rd. Matheson Rd. Trinity Mountain Rd. Walker Mine Rd.	expected change in average, annual daily traffic	plus 6 to 18 plus 12 to 30 plus 7 to 19 plus 11 to 32 plus 12 to 30 plus 4 to 8 plus 4 to 8 plus 4 to 8 plus 4 to 8 plus 17 to 50 none	plus 3 plus 13 plus 24 plus 8 plus 13 plus 15 plus 6 plus 15 none (abandoned) plus 10 plus 4	plus 3 plus 15 plus 22 plus 5 plus 15 plus 10 plus 5 plus 5 none 5 plus 8 plus 6	no change plus 18 plus 16 plus 2 plus 18 plus 20 plus 4 plus 16 plus 4 plus 2 plus 5	plus 2 plus 20 plus 22 plus 7 plus 20 plus 22 plus 7 plus 15 plus 7 plus 9 plus 10
Air Pollution: Carbon Monoxide (CO) Oxides of Nitrogen (NO _x) Particulate Matter (PM ₁₀) Oxides of Sulfur (SO _x)	estimated pounds per year	20,500 to 26,300 3,700 to 4,800 440 to 550 310 to 400	32,000 to 37,500 5,700 to 6,700 670 to 790 480 to 570	30,800 to 36,500 5,500 to 6,600 650 to 770 470 to 550	27,000 to 32,700 5,400 to 6,300 570 to 690 410 to 500	30,300 to 36,000 5,400 to 6,500 640 to 760 460 to 540
Soil Resources: Road Related Erosion	estimated tons/year	no estimate available	530	525	500	530
Whiskeytown Deer Herd: Critical habitat damaged	acres	0	14	12	3	14
Road and Trail Status: (see notes below for explanation)						
1. Existing OHV roads & trails	miles	130	220	215	200	210
2. Seasonal OHV roads & trails	miles	70	0	0	0	0
3. Existing street-legal roads	miles	25	30	30	35	35
4. Existing non-motorized trails	miles	40	45	50	60	50
5. Unclear existing roads	miles	40	10	10	10	10
6. New OHV roads & trails	miles	8	14	13	2	14
7. New non-motorized trails	miles	0	1	1	1	1
8. Southern OHV access points	number	0	3	2	2	2
9. South to north corridors	number	1 partial	2 complete	1 partial, 1 complete	0	2 complete

Notes on Road and Trail Status:

1. Known existing roads and trails available to drivers with all registered motor vehicles, or non-motorized trail users.
2. Known existing roads and trails available to drivers with all registered motor vehicles between April 1 to October 15 only.
3. Known existing roads and trails available to drivers with motor vehicles registered for highway use only.
4. Known existing roads and trails available to non-motorized trail users only.
5. Known existing roads and trails with no clear planning direction regarding use.
6. Major new roads and trails available to drivers with all registered motor vehicles, or non-motorized trail users.
7. Major new trails available to non-motorized trail users only.
8. Number of potential access points (staging areas) located to the southwest that would be developed and available for drivers with all registered motor vehicles.
9. Number of transportation corridors that would be available to drivers with all registered motor vehicles and would stretch from the south to the north.

CHAPTER 3:

A black and white cartoon illustration. On the left, a man wearing a fedora-style hat and a plaid shirt is riding a dark horse. He is looking towards the right. In the center, a man in a flight suit is standing next to a motorcycle, looking towards the man on the horse. The background features a range of mountains, some trees, and a body of water with a small boat. The style is a simple line drawing with some cross-hatching for shading.

Chapter 3: AFFECTED ENVIRONMENT

This chapter describes the environmental components that are issues of the area and would affect (or would be affected by) the various alternatives if they were fully implemented. This chapter introduces the topics that are described and briefly discusses the various environmental components.

Introduction

The Interlakes Special Recreation Management Area (ISRMA) encompasses lands under the jurisdiction of several Federal agencies and numerous private landowners. In order to provide a comprehensive discussion of the environment, BLM consulted with various public and private landowners and reviewed numerous environmental documents. Topics addressed within this chapter are related to issues identified by BLM, various public agencies, private landowners and public land users. Brief discussions are provided regarding land-use zoning, wildlife resources, fishery resources, special status wildlife species, special status plant species, recreational resources, law enforcement, private landowner liabilities/trespass, surface hydrology, noise environment, acid mine drainage, air quality, vegetative resources, soil resources, and cultural resources.

Land-Use Zoning

Information regarding zoning classifications has been compiled from the Shasta County General Plan. The following discussion includes: 1) general zoning; 2) compatible zoning; 3) non-conforming uses in compatible zones; and 4) incompatible zoning within the ISRMA.

General Zoning: The dominant zoning designation within the ISRMA is for "Public Land" which directly relates to the presence of land administered by the Federal government. The dominant zoning of private land is "Timber Production". This designation is generally found in the northern half of the Interlakes ISRMA and, mainly at higher elevations. About one-half of this acreage was administered by Sierra Pacific Industries and has been largely acquired by BLM.

"Natural Habitat Resource" zoning is found in the southwestern quarter and along the northwestern margin of the ISRMA. "Mineral Resource" zoning is a major classification in the southeastern quarter. "Rural Residential (5 acre minimum)" is found on an axis near the Spring Creek Debris Dam to the confluence of the forks of Squaw Creek. A small area on the East Fork Clear Creek is also zoned "Rural Residential".

Minor zoning classifications include "Natural Resource Recreation" and "Open Space" on private land within the National Recreation Area and adjoining Keswick Reservoir respectively. "Suburban Residential" zoning is found along the southeastern margin, i.e. near the city limits of Redding. "Rural Residential (2 acre minimum)" is found along the margins of the ISRMA near the community of Keswick.

The western margin along Clear Creek, near the community of French Gulch, falls within a Community Plan area; however, most parcels east of Trinity Mountain Road and up slope are relatively large and undeveloped. Lastly, the extreme northwestern margin is classified as "Agricultural-Grazing" land.

Compatible Zoning: The ISRMA generally consists of low intensity, compatible zoning such as "Timber Production", "Natural Resource Habitats", "Mineral Production", and "Grazing". These types of extensive-use lands are usually compatible with recreational development on adjoining land and minimize the potential for conflicts between recreationists and improved investments (eg. residential structures and facilities).

Non-Conforming Uses Within Compatible Zoning: Most land uses within the ISRMA conform with their zoning designations and, particularly so, within low intensity classifications. There are two notable exceptions which are located in the East Fork Clear Creek and near the former community of Coram.

Section 32 (T. 34 N., R 6 W.) is zoned for "Timber Production" but includes eighteen separate parcels. Twelve of these parcels are located within the northeast quarter of the section and many have been developed with residential structures. Public recreation opportunities can be constrained by these developments and private land may be impacted by adjoining recreational uses. This area could be managed for more extensive land uses only through purchase and removal of the improvements.

The area around Coram is zoned for "Open Space". However, this area contains numerous individual parcels because it was a townsite. Few residential improvements have been made within this area.

Incompatible Zoning: The zoning designation with the highest potential for conflict within the ISRMA is "Rural Residential". Large tracts of land, mostly owned by corporate landowners, are zoned "Rural Residential (5 acre minimum)". These lands are generally unimproved and were used historically for mineral production. Most of these lands are steep and unsuited for development.

"Rural Residential (5 acre minimum)" zoning is also found within the lower portion of the East Fork Clear Creek and some hill country immediately east of French Gulch. These areas may not be suited for intensive rural residential developments due to their steep slopes. Because these parcels are on the margins of the ISRMA, recreational opportunities on adjoining lands may still be compatible. Similarly, the small amount of "Rural Residential (2 acre minimum)" and "Suburban Residential" are not considered as inconsistent with recreation opportunities due to their location along a portion of the extreme, southeastern fringe of the ISRMA.

Wildlife Resources

The ISRMA encompasses approximately 10 vegetative communities. These vegetative communities contain at least 48 seral stages, each having unique qualities valuable to different wildlife species. Using Wildlife Habitat Relationships for the plant communities within the ISRMA, approximately 334 wildlife species could inhabit the area. The 334 wildlife species include 16 amphibian species, 216 bird species, 81 mammal species, and 21 reptile species. Table 3.1 shows the relative number of wildlife species supported by the various habitats identified within the ISRMA.

Table 3.1 Number of Wildlife Species Associated With Habitats Found Within The ISRMA											
Wildlife	Habitat Type (Wildlife Habitat Relationships)										
	4	2	6	4	6	6	7	4	6	10	11
Amphibians	4	12	11	11	6	6	10	6	6	6	16
Birds	103	111	128	128	107	87	123	86	50	59	216
Mammals	55	86	50	50	50	29	63	29	18	19	81
Reptiles	18	29	18	18	12	18	12	4	4	3	21
TOTAL	178	212	208	217	185	132	208	128	50	87	334
Key To Habitat Types: 1 = Mixed Chaparral 2 = Mixed Conifer 3 = Valley-Foothill Hardwood 4 = Ponderosa Pine 5 = Douglas-fir 6 = Closed-Cone Pine-Cypress 7 = Wet Meadows 8 = Emergent Wetland 9 = Lacustrine 10 = Rivenne 11 = All ISRMA Habitats Combined											

A listing of wildlife species known or suspected within the ISRMA was generated from the habitats identified using the Wildlife Habitat Relationship system. The list is available at BLM's Redding office and includes notable game species such as wild pig, black bear, California quail and black-tailed deer.

The dominant habitat within the ISRMA is mixed chaparral and most wildlife species within the ISRMA are associated with this habitat. The Whiskeytown deer herd (black-tailed deer) is a sub unit of the Weaverville deer herd and occupies an area between Shasta Lake/Sacramento River in the north and east, and Clear Creek/Whiskeytown Lake in the south and west. The ISRMA contains approximately 27,488 acres of deer winter-range which extends north above Whiskeytown Lake within the Clear Creek watershed. A map overlay of the ISRMA deer winter-range is available for review at BLM's Redding office.

Winter habitat provides forage and vegetative cover important to deer during their gestation period. The winter-range lies mostly on south and west facing slopes within the Clear Creek watershed and is dominated by chamise, manzanita, ceanothus, black oak, and grey pine. Ceanothus and black oak have the greatest nutritional value for the wintering deer. Past and present land management practices have limited the amounts

of ceanothus and black oak (acorns) available for deer.

Fire suppression practices have reduced the quantity and quality of ceanothus within the ISRMA and have caused increases in less nutritional vegetation such as chamise and manzanita. One landowner mentioned that black oak trees were removed during commercial timber harvest operations within the ISRMA because it was considered a weed species.

Approximately 53 miles of road and trail cross through deer winter-range within the ISRMA. Motorized travel over these roads between November and April may stress deer populations. Increased motorized travel over these roads and trails may translate into decreased natality rates. Motorized travel over these roads and trails is currently moderate with a majority of road use by residents near Cline Gulch and East Fork Clear Creek, timber hauling trucks, and recreationists.

Fishery Resources

Fish bearing rivers and lakes encompassed by the ISRMA include Keswick Reservoir, Sacramento River, Cottonwood Creek, Motion Creek, Spring Creek above Stowell Mine, North Fork Squaw Creek, Clear Creek, Whiskeytown Lake and Whiskey Creek. Acid mine drainage and its influence on water quality has been, and in many places still is, a major factor impacting fishery habitat. Table 3.2 provides a summary of fishery resources within the Sacramento River watershed which could be affected by land-use decisions within the ISRMA.

Keswick Reservoir (Shasta Dam to Keswick Dam): This cold water reach currently supports wild rainbow and brown trout and no fish have been planted. Although some warm water and non-game species are present here, the cold water releases from Shasta Dam favor trout and they are dominant. Large trout are common in this area with the upper portion being the most productive. The lower two miles of the river have been impacted by acid mine drainage which enters the reservoir at Spring Creek. Concentrations of cadmium have been found accumulated within fish livers according to the California Department of Fish and Game.

Some of the tributaries within this area contain small populations of trout, but are probably more important as spawning areas for trout from Keswick Reservoir. Cottonwood Creek and Motion Creek are known to contain trout while Flat Creek is sterile due to acid mine drainage produced from the Stowell Mine.

Sacramento River (below Keswick Dam): This area is managed primarily for wild trout and has limit and gear restrictions applicable to fishermen (one fish limit and barbless hooks only). Salmon fishing is prohibited within this stretch of river and fishing is not allowed within 650 feet of Keswick Dam. Fish contaminated with dioxin were once found within the area and the California Department of Fish and Game once recommended that

no resident fish be eaten from here. The warning no longer applies and anadromous fish have never been subject to the warning since they move into the area from the ocean and are presumed to be clean.

Rock Creek and Middle Creek are tributaries to this stretch of the Sacramento River and contain small numbers of rainbow and brown trout. These tributaries contain relatively low flows and may be most valuable as spawning areas for fish coming out of the Sacramento River.

Shasta Lake Tributaries: Two forks of Squaw Creek are located within the ISRMA. The North Fork Squaw Creek contains a good population of rainbow trout while the South Fork Squaw Creek is sterile due to acid mine drainage from the Balaklala Mine complex.

Clear Creek (above Whiskeytown Lake): Clear Creek, between the falls at the town of French Gulch and Whiskeytown Lake, contains a fair to good rainbow and brown trout fishery. This segment is planted during April and May with fish by the California Department of Fish and Game. In addition to rainbow and brown trout, some kokanee salmon are found within this segment and utilize the relatively clean spawning gravels.

There are substantial populations of wild rainbow trout located above the falls at French Gulch. The Cline Gulch, East Fork and Big Gulch tributaries contain good populations of rainbow trout as well. One private landowner on Clear Creek leases a camp to a fly fishing organization and augments the waters with planted rainbow trout.

Whiskeytown Lake: The ISRMA encompasses portions of Whiskeytown Lake which extend north of Highway 299. The lake is regularly stocked with varieties of rainbow trout, kokanee salmon, and occasionally, brown trout, brook trout, small and spotted bass. Other game fish within the lake include largemouth bass, crappie, bluegill and catfish.

Whiskey Creek: Although the creek normally has low flows, it contains a population of rainbow trout. Both rainbow trout and kokanee salmon from Whiskeytown Lake utilize this stream to spawn in. The creek has a limited fishing season which normally runs from the last Saturday in April through November 15th of each year.

Table 3.2
Fishery Resources of the Upper Sacramento River, Keswick Reservoir,
and South Fork Spring Creek

Common Name	Scientific Name	State Status	Federal Status
Sacramento River			
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Endangered (winter run)	Endangered (winter run)
Steelhead Trout	<i>Oncorhynchus mykiss</i>	N/A	N/A
Rainbow Trout	<i>Oncorhynchus mykiss</i>	N/A	N/A
Prickly Sculpin	<i>Cottus asper</i>	N/A	N/A
Sacramento Sucker	<i>Catostomus occidentalis</i>	N/A	N/A
Sacramento Squawfish	<i>Ptychocheilus grandis</i>	N/A	N/A
Keswick Reservoir			
Rainbow Trout	<i>Oncorhynchus mykiss</i>	N/A	N/A
Threadfin Shad	<i>Dorosoma petenense</i>	N/A	N/A
Kokanee Salmon	<i>Oncorhynchus nerka</i>	N/A	N/A
Eagle Lake Trout	<i>Oncorhynchus mykiss aquilarum</i>	N/A	N/A
Brown Trout	<i>Salmo trutta</i>	N/A	N/A
Brook Trout	<i>Salvelinus fontinalis</i>	N/A	N/A
Channel Catfish	<i>Ictalurus punctatus</i>	N/A	N/A
Smallmouth Bass	<i>Micropterus dolomieu</i>	N/A	N/A
Green Sunfish	<i>Lepomis cyanellus</i>	N/A	N/A
South Fork Spring Creek			
Rainbow Trout	<i>Oncorhynchus mykiss</i>	N/A	N/A
California Roach	<i>Hesperoleucus symmetricus</i>	N/A	N/A
Source: U.S. Bureau of Reclamation, 1994; U.S. Environmental Protection Agency, 1992			

Special Status Wildlife Species

Information regarding special status wildlife species has been compiled from the California Natural Diversity Database, surveys conducted by BLM, Bureau of Reclamation, Forest Service, National Park Service, and information from other planning documents or private landowners. The following discussion includes: 1) a definition of special status animal species; and 2) a description of the special status animals known or suspected within the ISRMA.

Special status animals are species that are proposed for listing as threatened or endangered by the Secretary of the Interior, are listed by the Secretary of Interior under the provisions of the Endangered Species Act, are designated as Federal candidates for listing, are proposed for listing or listed by the state of California, or are designated by the California State Director of BLM as sensitive.

The ISRMA is known to support two special status amphibian species, one special status bird species, one special status mammal species, and one special status fish species. Shasta salamanders (*Hydromantes shastae*), a Federal C-2 species and a California threatened species, have been identified near limestone outcroppings and talus slopes at three locations within the ISRMA. Foothill yellow-legged frogs (*Rana boylei*), a Federal C-2 species and California species of concern, have been identified near Spring Creek Reservoir (Bureau of Reclamation, 1994). Bald eagles (*Haliaeetus leucocephalus*), a Federal and California endangered species, have been identified at four locations within the ISRMA. Pacific fishers (*Martes pennanti*), a Federal C-2 and California species of concern, have been identified at two locations within the ISRMA. Finally, winter-run Chinook salmon (*Oncorhynchus tshawytscha*), a Federal and state endangered species, utilize the Sacramento River below Keswick Dam.

Northern spotted owls (*Strix occidentalis*), a Federal threatened species, have not been identified within the ISRMA, although small amounts of marginal roosting and foraging habitat are present. These small areas of habitat are isolated from larger blocks of occupied owl habitat to the west and are on the eastern margins of the owls range. Matrix habitat within the ISRMA does not contribute significantly to the recovery of the owl throughout the range.

Table 3.3 shows the special status wildlife species which are known or suspected within the ISRMA. Animals which are protected by other Federal or state legislation are included within the table.

Species	Location	Status
Shasta salamander	Three locations	Federal C-2, California threatened
Foothill yellow-legged frog	Near Spring Creek Reservoir	Federal C-2, California species of concern
Bald eagle	Four locations	Federal and California endangered
Pacific fisher	Two locations	Federal C-2, California species of concern
Winter-run Chinook salmon	Sacramento River below Keswick Dam	Federal and state endangered
Northern spotted owl	Not identified	Federal threatened

Table 3.3
Special Status and Protected Wildlife Species
Known or Potentially Occurring Within ISRMA

Common Name	Scientific Name	Status	Occurrence
Winter-run Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	FE, CE	Known
Western Spadefoot	<i>Scaphiopus hammondi</i>	FC2	Potential
Red-legged Frog	<i>Rana aurora draytoni</i>	FC2P, CSC	Potential
Cascades Frog	<i>Rana cascada</i>	CSC	Potential
Shasta Salamander	<i>Hydromantes shastae</i>	FC2, CT	Known
Foothill Yellow-legged Frog	<i>Rana boylei</i>	FC2, CSC	Known
Common Loon	<i>Gavia immer</i>	CSC	Potential
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	CSC	Potential
Barrow's Goldeneye	<i>Bucephala islandica</i>	CSC	Potential
Osprey	<i>Pandion haliaetus</i>	CSC	Known
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FE, CCE, CP	Known
Northern Harrier	<i>Circus cyaneus</i>	CSC	Potential
Sharp-skinned Hawk	<i>Accipiter striatus</i>	CSC	Potential
Cooper's Hawk	<i>Accipiter cooperii</i>	CSC	Potential
Swainson's Hawk	<i>Buteo swansonii</i>	CT	Potential
Ferruginous Hawk	<i>Buteo regalis</i>	FC2	Potential
Golden Eagle	<i>Aquila chrysaetos</i>	CP	Potential
Merlin	<i>Falco columbarius</i>	CSC	Potential
Peregrine Falcon	<i>Falco peregrinus</i>	FE, CE, CP	Potential
Prairie Falcon	<i>Falco mexicanus</i>	CSC	Potential
Blue Grouse	<i>Dendragapus obscurus</i>	CSC	Potential
Sandhill Crane	<i>Grus canadensis</i>	CT	Potential
Black Tern	<i>Chlidonias niger</i>	CSC	Potential
Northern Spotted Owl	<i>Strix occidentalis</i>	FT	Potential
Long-eared Owl	<i>Asio otus</i>	CSC	Potential
Black Swift	<i>Cypseloides niger</i>	CSC	Potential
Vaux's Swift	<i>Chaetura vauxi</i>	CSC	Potential
Willow Flycatcher	<i>Empidonax traillii</i>	CE	Potential
Purple Martin	<i>Progne subis</i>	CSC	Potential
Bank Swallow	<i>Riparia</i>	CT	Potential
Yellow Warbler	<i>Dendroica petechia</i>	CSC	Potential
Yellow-breasted Chat	<i>Icteria virens</i>	CSC	Potential
Tricolored Blackbird	<i>Agelaius tricolor</i>	FC2, CSC	Potential
Pallid Bat	<i>Antrozous pallidus</i>	CSC	Potential
Ringtail	<i>Bassariscus astutus</i>	CP	Potential
Northwestern Pond Turtle	<i>Clemmys marmorata</i>	FC2P, CSC	Potential
Pacific Fisher	<i>Martes pennanti</i>	FC2, CSC	Known

Status Definitions:

FE = Federally Endangered	FT = Federally Threatened	CE = California Endangered
CP = California Protected	CT = California Threatened	FC2 = Federal Category 2 Candidate
FC2P = Federal Category 2 Candidate-Petitioned		CSC = California Special Concern

Special Status Plant Species

Information regarding special status plant species has been compiled from the California Natural Diversity Database, surveys conducted by BLM, and information available from other public and private landowners. The following discussion includes: 1) a definition of special status plant species; 2) a description of the special status plants known or suspected within the ISRMA; and 3) a description of other unique plants and communities found within the ISRMA.

BLM uses the term "special status plants" to include all of the following: 1) Federally-listed and proposed species; 2) Federal candidate species; 3) State-listed species; and 4) sensitive species. Sensitive species are those species that do not meet any of the first three criteria, but which are designated by the State Director of BLM for special management consideration. Plants on List 1B (Plants Rare, Threatened, or Endangered in California and elsewhere) of the California Native Plant Society *Inventory* that do not meet any of the first three criteria are considered sensitive by BLM in California. Sensitive plants receive the same level of protection as Federal candidate species.

The ISRMA is known to support populations of Canyon Creek stonecrop (*Sedum paradisum*), and may support populations of silky cryptantha (*Cryptantha crinita*), Shasta snow-wreath (*Neviusia cliftonii*), thread-leaved beardtongue (*Penstemon filiformis*), and Howell's alkali-grass (*Puccinellia howellii*). Canyon Creek stonecrop is located on north and west facing slopes on outcrops of exposed bedrock. Although the other species have not been found within the ISRMA, populations are nearby and their occurrence is suspected. Table 3.4 shows the known or suspected special status plant species within the ISRMA.

Table 3.4
Special Status Plant Species Known or Suspected
Within the ISRMA

Common Name	Scientific Name	Status	Occurrence
Silky cryptantha	<i>Cryptantha crinita</i>	CNPS 1B, Fed C2	suspected
Shasta snow-wreath	<i>Neviusia cliftonii</i>	CNPS 1B	suspected
Thread-leaved beardtongue	<i>Penstemon filiformis</i>	CNPS 1B, Fed C2	suspected
Howell's alkali-grass	<i>Puccinellia howellii</i>	CNPS 1B, Fed C1	suspected
Canyon Creek stonecrop	<i>Sedum paradisum</i>	CNPS 1B, Fed C2	known

Source: Bureau of Land Management, 1994; California Natural Diversity Database, 1994

Other unique or special interest plant communities within the ISRMA include Shasta County arnica (*Arnica venosa*) and McNab cypress (*Cupressus macnabiana*). Shasta County arnica was once considered a sensitive plant species and is located in several areas within the ISRMA. The plant is normally found on ridge tops and older road cuts and usually thrives on northern aspects. McNab cypress was once well represented in

the ISRMA by a grove which was destroyed by the creation of Whiskeytown reservoir. Although McNab cypress is a common species, the Whiskeytown grove was the only well published stand because of its easy accessibility and its early discovery. It also was unique in relation to all other locations due to its edaphic situation (i.e. the type of soil it was growing on). This grove was also probably the type locality for this species of which only a remnant still remains adjacent to the Whiskey Creek arm of the reservoir.

One individual providing comment during a public meeting identified *Penstemon cinicola*, *Campanula wilkinsiana* and Greenes mariposa lily as being probable within the ISRMA. BLM's records and the California Natural Diversity Database indicate that none of these species are probable within the ISRMA.

Recreational Resources

The ISRMA encompasses significant recreational resources under the jurisdiction of the BLM, National Park Service, Forest Service, Bureau of Reclamation, City of Redding, and Shasta County. Because recreational opportunities within the ISRMA span multiple jurisdictions, several agencies contributed in describing the recreational setting. The following discussion includes: 1) current recreational uses; and 2) current recreational facilities.

Current Recreational Uses: Recreational use within the ISRMA has been growing in concert with the growing population of Shasta County and the popularity of the area for regional tourism. Both upland and water oriented recreation has increased creating conflicting uses and degraded recreational experiences. Although the ISRMA encompasses substantial amounts of private land, the region has been popular to recreationists for several decades.

OHV Recreation: Off-highway vehicle (OHV) use involves the operation of any motorized vehicle designed or used for travel over natural terrain, unimproved routes, roadways or other routes not defined as highways. Because OHV's can be legally licensed for highway use, or registered for OHV use only, any motorized travel over logging roads, fire access roads, service roads, or trails (regardless of the surface) is considered OHV use. Although OHV travel is often required in order to pursue other recreational activities such as hunting and camping, OHV recreation is normally a characterization of use where the primary activity engaged in involves the operation of an OHV.

In 1984, the BLM and Forest Service prepared a joint plan and environmental assessment formulating the Chappie/Shasta Off-Highway Vehicle Management Area (OHVMA). Since that time, the California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division has provided grant funding for land acquisitions totalling about 3.6 million dollars which has greatly assisted in the acquisition of nearly 13,500 acres within this recreation area. The OHVMA encompasses 52,000 acres and 250 miles of existing road and trail between the Sacramento River and Clear Creek. The OHVMA was

established as a positive way to resolve problems associated with OHV use, while providing enhanced opportunities for OHV users.

Before the OHVMA was established, motorized dependent recreation was popular within the area and OHV use was generally unmanaged. Lack of management contributed to trespass problems, unsafe vehicle operation, and environmental degradation. The management program established under the OHVMA focused on providing road and trail riding opportunities, protecting natural resources impacted by past and current OHV use, and enforcing regulations pertaining to OHV operation. Although the management program has greatly reduced many of the problems associated with OHV use, BLM and the Forest Service recognize that much still needs to be done.

The OHVMA plan specified actions required to manage OHV use within the region. The plan called for the acquisition of trail easements, acquisition of available lands, installation of signs, publication of a user guide, reconstruction and protection of trails, development of a staging area near Shasta Dam and the construction of new trails. Although the OHVMA plan encompassed land under the jurisdiction of Bureau of Reclamation, decisions were only applicable to BLM and Forest Service land. Bureau of Reclamation lands containing trails have not been managed by BLM and the Forest Service as part of the OHVMA.

OHV recreation within the OHVMA is somewhat seasonal, with the greatest use occurring between September to November and March to May. OHV recreation consists mostly of motorcycle riding, four-wheel drive vehicle use, and all terrain vehicle (ATV) use. Of the 250 miles of road and trail encompassed by the OHVMA, approximately 58 miles are suitable for motorcycles, 37 miles are suitable for ATV's, 80 miles are suitable for four-wheel drive vehicles, and 75 miles are recommended for four-wheel drive and/or other high clearance vehicles. OHV use is prohibited off established roads and trails. The 1984 OHVMA environmental assessment established the theoretical carrying capacity of the recreation area at 54,720 annual visits; OHV usage in 1993 was approximately 36,400 annual visits.

Various motorcycle dealerships and clubs had promoted OHV events within the ISRMA before the OHVMA was established. BLM now regulates OHV events within the OHVMA under a permit system pursuant to regulations found under 43 CFR 8370. The permits have been effective in reducing user conflicts, preventing trespass problems, establishing appropriate ride locations, and ensuring proper equipment. In a normal year, BLM regulates six OHV related events including the Shasta Grand Prix (250 to 300 riders), Buckhorn Enduro (150 to 200 riders), and several recreational trail rides (40 to 100 riders).

OHV recreation is also prevalent within areas outside the OHVMA. The east side of the Sacramento River between Shasta Dam and Keswick Dam contains approximately 65

miles of road, trail, and powerline right-of-way which receive some OHV use. The proximity of this area (which is accessible by Walker Mine Road) to the City of Shasta Lake makes it popular to local OHV users. Approximately 1,000 annual visits of OHV recreation are suspected within this area.

The lands east of the Sacramento River are primarily under the jurisdiction of the Bureau of Reclamation and BLM. Although BLM has not officially closed the BLM roads within this area to OHV use, BLM has not encouraged OHV use within this narrow ribbon of public land sandwiched between the Sacramento River and the City of Shasta Lake.

The lands immediately west of the Sacramento River between Shasta Dam and Keswick Dam are primarily Bureau of Reclamation lands. The abandoned Southern Pacific Transportation Company railroad grade which extends northward into the ISRMA below Spring Creek is also under the jurisdiction of Bureau of Reclamation. This railroad grade has been a popular trail for OHV users well before the Interstate Commerce Commission issued a certificate and decision granting the rail line abandonment in 1980. Although this trail is not managed as part of the OHVMA, OHV use is popular.

OHV recreation on the railroad grade is estimated at 4,300 annual visits with about 50% of the use by four-wheel drive and two-wheel drive vehicles, 40% of the use by motorcycle riders and 10% of the use by ATV riders. More than 45 cars and motorcycles travel on the railroad grade daily according to one private landowner with a residence near the area. Some of this motorized use was associated with squatters living on the railroad grade near Motion Creek, and this use is not considered valid OHV recreation.

The railroad grade is popular for OHV driving because it is adjacent to the Sacramento River (Keswick Reservoir) and temperatures are moderate. Fishermen, hunters, campers, pleasure drivers, and target shooters also use the railroad grade for motorized access. Although a few segments of the railroad grade are accessible only by four-wheel drive vehicles, motorcycles, or ATV's; two-wheel drive vehicles can travel nearly the length of the grade.

OHV use on lands administered by the National Park Service within the ISRMA is guided by the "Master Plan" completed in 1976, the "Natural Resources Management Plan" completed in 1975, and the "Compendium of Designations, Closures, Permit Requirements and other Regulations". The plans and compendiums specify that all logging roads and skid trails not identified for use on the National Park Service road classification map are closed to motor vehicle traffic. The roads shown on the road classification map include the South Fork Lookout Road, the access road to Mexican Spring, Grizzly Gulch Road, Merry Mountain Road, and the access road to the Tower House housing area. Compendiums applicable to 36 CFR 4.10 currently prohibit motor vehicles which are not street legal on any of the designated roads.

OHV use by street legal vehicles on National Park Service lands within the ISRMA is minimal, with most usage occurring in support of other recreational endeavors such as hunting. Little information is known regarding use levels, but OHV recreation on National Park Service land is suspected to be less than 1,000 annual visits.

Sightseeing/Automobile Touring: Sightseeing and automobile touring (touring) involves the travel to points of interest for the purpose of viewing unique natural landscapes and/or man-made features. Although touring is one of the most popular recreation activities within the ISRMA, it is one of the least studied and understood. Several features within the ISRMA attract visitors from around the world, while other features cater to a more regional clientele.

The Bureau of Reclamation's Shasta Dam and Visitor Center is a tremendous, international attraction located within the ISRMA. Accessible from Highway 151, the dam is only eight miles west of Interstate 5. Visitor surveys conducted by BLM and the Forest Service's Pacific Southwest Research Station in the summer of 1993 indicate that over 16 percent of the touring visitation occurs from individuals residing outside California.

Beginning in June of 1993, Bureau of Reclamation resumed tours of the dam which had been postponed since 1985. Visitation to the dam and the tours is very seasonal, with the summer drawing the largest crowds. Between June 1993 and May 1994, 101,607 visitors signed the guest register within the Visitor Center and 44,871 attended the guided tours. The seasonal visitation pattern is shown in Table 3.5.

Table 3.5 Seasonal Visitation to Shasta Dam		
Season of Visitation (Three Month Intervals)	Guided Tour Visitors	Visitor Center Visitors
Summer (June 1993 - August 1993)	22,194	49,303
Fall (September 1993 - November 1993)	10,691	26,774
Winter (December 1993 - February 1994)	2,771	6,269
Spring (March 1994 - April 1994)	9,215	19,261
Total	44,871	101,607
Source: U.S. Bureau of Reclamation, 1994		

Touring visitation to Shasta Dam is likely greater than what is quantified from guest registers located at the Visitor Center because many touring visitors may not sign the register, or may visit the dam when the Visitor Center is closed. For example, evening visitation to the dam in the summer is popular with Redding and City of Shasta Lake locals who never enter the Visitor Center. Total touring visitation to Shasta Dam is estimated between 150,000 to 200,000 annual visits.

Touring visitation is also popular at portions of Whiskeytown Lake within the ISRMA. Touring visitors to Whiskeytown Lake often let their curiosities carry them to the historic community of French Gulch or facilities located off Whiskey Creek Road. Actual touring visitation is difficult to estimate within this region, but is suspected to be around 5,000 annual visits.

Hiking/Running: Hiking and running is very popular on specific trails within the ISRMA. Hiking and running recreation is defined as a characterization of use where walking, jogging, running, or moving a wheelchair is the primary activity being conducted for enjoyment. The use of in-line skates is not included within the hiking and running discussion.

The popular City of Redding, Sacramento River Trail (Sacramento River Trail) has the greatest concentration of hiking and running recreation within the region. The Sacramento River Trail stretches north into the ISRMA over Bureau of Reclamation, BLM and City of Redding lands. The construction of a pedestrian bridge over the Sacramento River below Keswick Dam was a crucial link to the 8 mile long, paved trail. Annual use on the Sacramento River Trail is estimated at 300,000 visits with approximately 65% of those users crossing into the ISRMA (City of Redding, 1994).

Research conducted by BLM and the Forest Service in the summer of 1993 showed that 53% of the individuals reaching the bridge below Keswick Dam were either hiking or running. Because the entire Sacramento River Trail system is not encompassed by the ISRMA, hiking and running recreation attributed to this trail system is estimated at 103,350 annual visits.

Hiking and running recreation elsewhere within the ISRMA is more closely related to other forms of recreation. The Southern Pacific Transportation Company railroad grade which extends northward into the ISRMA below Spring Creek receives limited hiking and running recreation, but this use is closely associated with other recreation activities such as blackberry picking, fishing, or hunting. Hiking and running recreation on the east side of the Sacramento River between Keswick and Shasta Dam is also limited due to rugged and dry terrain. Total hiking and running recreation in both regions adjacent to the Sacramento River above Keswick Dam is estimated at 1,000 annual visits.

Hiking and running recreation adjacent to Shasta Lake and Whiskeytown Lake within the ISRMA is moderate near developed facilities. Most of this use within these areas is in support of fishing activities. Dry Fork Trail, which extends northward along Shasta Lake near Shasta Dam, receives occasional hiking and running recreation as do undeveloped trails near the group picnic area at Whiskeytown Lake. Total hiking and running recreation in both locations is estimated at 500 annual visits.

Hiking and running recreation near Clear Creek and the community of French Gulch is

also moderate with most use being from local residents. East Fork Road, Cline Gulch Road and other various trails on the western edge of the ISRMA support approximately 700 annual visits.

Hiking and running recreation within the heart of the OHVMA is minimal due to the dry and rugged terrain and remote location. Some individuals and groups will hike to ridge tops from various locations in order to take in spectacular views. Total hiking and running recreation within this region is estimated at 350 annual visits.

Mountain and Road Bike Riding: Mountain and road bike riding (cycling) is becoming increasingly popular within the ISRMA. Cycling recreation is defined as a characterization of use where riding a mountain bike or a road bike is the primary activity being conducted for enjoyment. Although a majority of the cycling use occurs at specific locations, riders are starting to venture further away from the popular path.

The Sacramento River Trail has the greatest concentration of cycling recreation within the region. Use on the Sacramento River Trail is estimated at 300,000 annual visits with approximately 65% of those visitors crossing into the ISRMA (City of Redding, 1994). Research conducted by BLM and Forest Service in the summer of 1993 showed that nearly 47% of the individuals reaching the bridge below Keswick Dam were riding mountain bikes or road bikes. Because the entire Sacramento River Trail system is not encompassed by the ISRMA, cycling use attributed to this trail system is estimated at 91,650 annual visits.

Cycling use is also growing in popularity on Bureau of Reclamation and BLM lands immediately adjacent to the Sacramento River above Keswick Dam. Mountain bike riders have been traveling northwest of the Sacramento River Trail near the community of Keswick to the Southern Pacific Transportation Company railroad grade. The railroad grade provides mountain bike riders with a long trail to Shasta Dam from the City of Redding, although many segments of the trail have loose gravel making pedaling difficult (eg. north of Spring Creek and south of the boat ramp).

Other mountain bike riders travel northeast of the Sacramento River Trail and cross Keswick Dam Boulevard reaching trails which extend adjacent to the Sacramento River towards Shasta Dam. Powerline rights-of-way have been used by mountain bike riders to reach many of these trail riding opportunities on the east side of the Sacramento River. Cycling use within both regions is estimated at 1,500 annual visits. Because most of these cycling riders are the same riders that are using the Sacramento River Trail, only 800 annual visits are considered separate from the Sacramento River Trail estimate.

Mountain bike riding is also growing in popularity within the heart of the OHVMA. Many riders are finding the designated roads and trails enjoyable for challenging rides into the mountains. Information on the trail markers has been useful to many of the riders in

determining the relative difficulty of the routes. The OHVMA trail maps have also been used by mountain bike riders in planning rides within the area.

BLM regulates competitive and commercial cycling use within the OHVMA under a permit system pursuant to regulations found within 43 CFR 8370. The OHVMA hosts the Lemeurian Classic mountain bike race each year totalling 450 to 500 riders. The popularity of this event (which is run concurrently with the Shasta Grand Prix Motorcycle Event) has been growing, and now mountain bike participants outnumber motorcycle participants.

Mountain bike riding is also popular north of Highway 299 between Trinity Mountain Road and South Fork Lookout Road. Many mountain bike riders stage their vehicles at the Whiskeytown Overlook and Information Area and ride up South Fork Lookout Road eventually tying into road and trail systems which travel west towards Whiskey Creek Road. Total cycling recreation within or adjacent to the OHVMA is estimated at 3,000 annual visits.

Cycling use along Highway 151 and Highway 299 provides riders with spectacular views. Road bikes traveling on the highways contend with heavy traffic at times with over 360 vehicles traveling daily on Highway 151 near Shasta Dam and 3,200 vehicles traveling daily on Highway 299 (Cal Trans, 1980).

In 1994, Bureau of Reclamation issued a Special Use Permit for a road bike/time trail which started at the staging area below Shasta Dam and ended at the Highway 151 overlook. Approximately 100 road bike riders participated at this event. Total cycling use on Highway 299 and Highway 151 is estimated at 1,300 annual visits.

Fishing: The ISRMA is bordered by two of the most popular fishing lakes within the region. Both Shasta and Whiskeytown lakes are fished all year long and are considered good fisheries for ten species: rainbow trout (including the famous Kamloops variety), brown trout, smallmouth bass, spotted bass, largemouth bass, crappie, bluegill, channel catfish, white catfish, and chinook salmon. The Whiskey Creek arm of Whiskeytown Lake falls within the ISRMA boundary and a total of approximately 18,250 annual visits of fishing occurs within this arm.

Keswick Reservoir, which is entirely encompassed by the ISRMA, receives moderate fishing use. The reservoir is formed by Keswick Dam which is an after bay of Shasta Dam and helps regulate flow within the Sacramento River. The reservoir is served by a boat ramp on the west shore of the lake above Spring Creek. A private marina once served the reservoir and was accessible from Walker Mine Road. This marina is now unused and Walker Mine Road is in poor condition.

Fishing for rainbow and brown trout is currently moderate in the reservoir because the

boat ramp parking area is not a secure place to leave a vehicle and the fear of acid mine drainage from Spring Creek is considerable. A lack of law enforcement presence at the boat ramp has contributed to unlawful activity within the area. Forest Service researchers conducting visitor surveys during the summer of 1993 indicated that the boat ramp was being used by target shooters and other individuals with questionable motives.

A Public Health Endangerment Assessment covering the reservoir was conducted by the Environmental Protection Agency in 1991. The assessment said that individuals who come in direct contact with water or sediments from the main body of Keswick Reservoir are currently not at risk from acid mine drainage. The assessment also said that individuals who consume fish from the main body of Keswick Reservoir may currently be at some risk, although the uncertainty associated with the assessment would likely result in the risk being overestimated. Due to high concentrations of cadmium found in fish livers, the California Department of Fish and Game recommends that fish livers not be eaten from the reservoir.

Total fishing use on the reservoir is estimated at 4,000 annual visits. The river above the reservoir, but below Shasta Dam receives an additional 1,000 annual visits of fishing use. Added together, fishing use between Shasta Dam and Keswick Dam is estimated at 5,000 annual visits.

Fishing the Sacramento River below Keswick Dam and within the ISRMA is fairly popular due to good foot access. Fishing is prohibited within 650 feet of Keswick Dam, and barbless hooks are required. Although salmon fishing is prohibited within this segment of the river, there is a one fish limit on resident trout. Total fishing use below Keswick Dam within the ISRMA is estimated at 2,200 annual visits.

Clear Creek also supports a fairly popular fishery. On the northern portion of the ISRMA, a fly fishing organization leases a camp located on private land. The organization regularly stocks the creek with rainbow trout and provides cabins to fishermen visiting the camp. Below the camp, California Department of Fish and Game stocks the creek in the spring. Total fishing use on the creek is estimated at 2,000 annual visits.

Hunting: The ISRMA contains several upland and big game species which have been moderately popular to hunters in the region. Valley and mountain quail, dove, rabbit and grey squirrel are the upland game that most hunters would likely encounter within the ISRMA, while black-tail deer, bear, feral pigs and turkey are popular big game species. Jump-shoot and decoy waterfowl hunting also occurs within the ISRMA at Keswick Reservoir. Although no game is plentiful within the ISRMA, easy road access brings some hunters to the region.

Hunting on National Park Service lands within the ISRMA is guided by the Natural Resources Management Plan prepared in 1975. While most of the National Park Service

lands are open to hunting, lands adjacent to Whiskey Creek Road, Pioneer Road, Grizzly Gulch and the Tower House area are closed to hunting.

Hunting elsewhere within the ISRMA is sporadic. According to Fish and Game, about 25 to 40 black-tailed deer are taken each year within the ISRMA, and several bear, wild turkey, and feral pigs are taken. Little is known regarding upland game bird and waterfowl hunting success, but hunting use is expected to be minimal. Using a 15% hunter success ratio and an average of 5.5 days of hunting per hunter, the ISRMA is estimated to support 267 hunters per year who spend approximately 1,450 days of hunting annually (California Department of Fish and Game, 1994).

Equestrian Use: Horseback riding within the ISRMA is presently minimal due to the paucity of non-motorized trails, the scarcity of shade and water, and the popularity of riding southwest of Whiskeytown Lake. Horseback riding had once been popular adjacent to the Sacramento River south of Keswick Dam, but with the development of the paved Sacramento River Trail, equestrian use has diminished.

The Sacramento River Trail is open to equestrian use and the City of Redding has issued a special use permit for an organization which conducts horse-drawn carriage rides. Most horseback riders, however, decline to use this trail because heavy cycling, hiking and running traffic on the trail makes equestrian use nearly impossible with a skittish horse.

Some equestrian use occurs on the South Fork Lookout Road and within the heart of the OHVMA near Balaklala Mine and Mammoth Mine. Although little use data is available, total equestrian use within the ISRMA is estimated at 1,500 annual visits.

Hang gliding and Paragliding: Hang gliding and paragliding (gliding) use within the ISRMA is limited due to the lack of multiple and easy landing areas and launch locations. Gliders currently launch near the Spreadeagle Mine or South Fork Lookout and fly within south facing bowls which can provide good winds. Flying is popular during the spring and late fall, while summer flying is limited due to crowded landing zones at Whiskeytown Lake.

Hang glider pilots prefer to launch at the Spreadeagle Mine where they can land at the Civic Auditorium and/or the staging area below Shasta Dam. The staging area below Shasta Dam was constructed with a large flat landing zone to serve flyers from the Spreadeagle Mine area. Paraglider pilots prefer to launch from the South Fork Lookout and land at the National Park Service group picnic area or boat ramp at Whiskeytown Lake. A local gliding club maintains a launching ramp on BLM land near South Fork Lookout. The National Park Service periodically issues permits to gliding groups which allows them to land at the group picnic area.

Most gliding use within the ISRMA is conducted by intermediate to advanced flyers (Class

II and Class III). Launching areas have steep slopes and/or drops which make them challenging to even the experienced glider. Landing zones are generally small pockets of flat terrain which make them difficult for hang gliders. Finally, the mountainous and forested terrain can produce erratic winds, thermals and rotors (especially during summer months) which makes air navigation difficult to many gliders.

Paragliding is currently more popular than hang gliding use within the ISRMA. This is principally due to the lack of large landing areas which are more critical to hang gliders. Total gliding use within the ISRMA is estimated at 200 annual visits.

Waterskiing and Jetskiing: Waterskiing and jetskiing (skiing) are popular summer activities within the Whiskey Creek arm of Whiskeytown Lake. Although the National Park Service has developed a substantial "No Wake" zone on the lake adjacent to the boat ramp and picnic areas, the arm provides enough space to support considerable skiing use. Local jetskiers frequently utilize an informal beach area near Whiskeytown store and ride the waters within the cove which are often sheltered from the wind. Waterskiers also utilize the Whiskey Creek arm of the lake, although space is limited for multiple waterskiing parties.

Skiing use within the lake is very seasonal with the summer being most popular. Weekend use is much heavier than weekday use and holiday weekends can be very crowded. Skiing use on the Whiskey Creek arm of the lake is estimated at 18,250 annual visits (National park Service, 1994).

Target Shooting: Target shooting is a very popular activity within the ISRMA. Target shooting is defined as the discharge of a firearm at a fixed or moving target for enjoyment and/or improvement of shooting skills. Of the 47 popular shooting locations identified by the City of Redding in 1990, 10 of those locations are within the ISRMA. These shooting locations have not been approved by public and private landowners, or Shasta County and City of Redding officials.

BLM and Bureau of Reclamation lands adjacent to Keswick Reservoir have been popular for target shooting recreation for many years. Easy access by vehicle, lack of law enforcement presence and the proximity to Redding makes this area a preferred area to shoot. Many target shooters bring in their own targets, others utilize abandoned vehicles or other garbage which can be found at many sites.

Other target shooters venture within the heart of the ISRMA in order to get further away from civilization. Although no formal areas have been established, target remnants, clay pigeons, and spent shell casings are signs of the use. Target shooting recreation is difficult to estimate and differentiate from vandalism, but approximately 1,100 annual visits are spent target shooting within the ISRMA.

Other Recreational Uses: Many other recreational uses occur within the ISRMA that have not been described here in detail. Berry picking, wildlife watching, spelunking, rock hounding, recreational mining, war game participation, sunbathing, swimming, in-line skating, kayaking and canoeing are all known to occur within the ISRMA. With the exception of in-line skating on the Sacramento River Trail, other recreation use is estimated to be relatively low. Approximately 500 annual visits of other recreational activities is estimated within the ISRMA.

Summary of Recreational Uses: Based upon recreational use estimates, Table 3.6 provides an overall comparison of the types of uses occurring within the ISRMA. Readers should note that visitors may participate in multiple recreation activities during a single visit to the ISRMA and double counting likely occurs. Recreational use estimates also include activities which begin or end outside the ISRMA. Finally, readers should note that a visitor's average length of participation varies by the recreation activity engaged in.

Table 3.6
Recreational Use Summary For the ISRMA (1993-1994)

Recreational Activity Within ISRMA	Estimated Annual Visits
OHV Recreation	42,700
Sightseeing / Automobile Touring	205,000
Hiking and Running	105,900
Mountain and Road Bike Riding	96,750
Fishing	27,450
Hunting	1,450
Equestrian Use	1,500
Hang gliding and Paragliding	200
Waterskiing and Jetskiing	18,250
Target Shooting	1,100
Other Recreational Activities	500
Total Recreational Uses (1993-1994)	500,800

Recreational Facilities: The ISRMA is supported by public recreational facilities which serve both land and water dependent recreation uses. Although many visitors to the ISRMA utilize recreation facilities not encompassed by the ISRMA, the discussion centers on facilities located within the ISRMA. Private recreational facilities encompassed by the ISRMA are also excluded from the following discussion.

OHVMA Staging Area: The OHVMA staging area is a misnomer because it serves visitors conducting many recreation activities other than OHV riding/driving. The staging area is located southwest of Shasta Dam on Forest Service land and features 30 camping units, wheelchair accessible vault toilets, drinking water, OHV loading ramps, day-use

parking, picnic tables, barbecue grills, hang gliding/paragliding landing zone, garbage collection, fishing access, and a site attendant.

Shasta Dam Visitors Center: The Shasta Dam Visitors Center (Visitors Center) is located adjacent to Highway 151 southeast of Shasta Dam and is operated by the Bureau of Reclamation. The Visitor Center features a paved parking lot, wheelchair accessible flush toilets, auditorium, interpretive area, picnic tables and viewing platforms.

Keswick Boat Ramp: The Keswick Boat Ramp is located northwest of Keswick Dam on Keswick Reservoir between Matheson Mine and Spring Creek. The boat ramp is located on Bureau of Reclamation lands and operated by Shasta County. The boat ramp features a paved parking area, one lane boat ramp, dock and a restroom which has been closed.

Whiskey Creek West: Whiskey Creek West is located on National Park Service lands north of Highway 299 on the western edge of Whiskeytown Lake's Whiskey Creek arm. Whiskey Creek West contains a five-lane boat ramp, dock, 39 car/trailer paved parking spaces, 42 single car paved parking spaces, 16 site picnic grounds, and flush toilets.

Whiskey Creek East: Whiskey Creek East is located on National Park Service lands north of Highway 299 on the eastern edge of Whiskeytown Lake's Whiskey Creek arm. Whiskey Creek East contains three group picnic areas (160 sites), beach, vault toilets and two acre (unimproved) parking lot. The facility can be reserved for use from National Park Service under a permit system.

Sacramento River Trail: The entire City of Redding Sacramento River Trail (Sacramento River Trail) is not encompassed by the ISRMA, but extends northward into the planning area below Keswick Dam. The 12 foot wide paved trail features a 420 foot long concrete stress-ribbon bridge, vault toilets, drinking water, interpretive signing and picnic tables.

Law Enforcement

Because the ISRMA encompasses a patchwork of different land ownerships, law enforcement is conducted by several sources. The BLM, National Park Service, Forest Service, Shasta County, and California Highway Patrol all provide law enforcement support within portions of the ISRMA. The following discussion highlights areas where unlawful activity is prevalent and summarizes the cooperative relationship peace officers from various entities currently have.

Unlawful Activity. The ISRMA receives considerable unlawful activity due to easy access into the region and a limited law enforcement presence. Information described was provided by peace officers and private landowners within the ISRMA. The following discussion centers on illegal land uses and other natural resource crimes within specific regions.

East Fork of Clear Creek: Although BLM lands are subject to a 14 day camping limit, long-term occupancy of public lands has been a problem within this area. Illegal firewood cutting, dumping, road hunting, poaching and private property trespass are often associated with long-term occupants. Although East Fork Road is a county roadway, private landowners have reported motorcycles which are not street legal traveling over the road. Private landowners have also reported that individuals are camping on their land without authorization.

Cline Gulch Area: Unlawful activity within this region is very similar to that within the East Fork area, only more prevalent.

Whiskey Creek Area: BLM, National Park Service and private landowners have ongoing problems with long-term occupancy of lands within this area. Dumping is also popular near Whiskey Creek. A private landowner within the region has indicated that marijuana growers frequently use roads within this area to access their gardens.

OHVMA Staging Area to Railroad Tunnel: Before the staging area was constructed below Shasta Dam, the area had been popular for dumping, shooting and long-term occupancy. Less unlawful activity is now occurring within this region due to Forest Service patrol of the staging area, BLM patrol of the Bureau of Reclamation land between the tunnel and the staging area, and a full time site attendant at the staging area.

Railroad Tunnel to Keswick Boat Ramp: This Bureau of Reclamation land is fairly remote and popular to long-term occupants especially near Motion Creek and Matheson Mine. There is extensive long-term camping, illegal camping fires, trash dumping, abandoned vehicles, shooting, and suspected drug cultivation or manufacturing. BLM began patrolling these lands in May of 1994 under the authority of a three party cooperative management agreement between Bureau of Reclamation, BLM and Shasta County. BLM patrols have been successful in reducing many of the problems.

Keswick Boat Ramp Area: This area is popular for late night parties, shooting, garbage dumping and vandalism. The parking lot is frequently damaged by bonfires made during parties and assaults have been reported at the facility. Unlawful activity at the boat ramp is the major reason why most boaters will not use the facility.

Iron Mountain Road Area: Bureau of Reclamation, BLM and private lands adjacent to Iron Mountain Road receive extensive shooting use, household and commercial dumping, and occasional long-term occupancy near Flat Creek.

Walker Mine Road Area: Bureau of Reclamation, BLM and private lands within this region receive extensive shooting use and garbage dumping. Household and commercial dumping can be very heavy at times. Other problems within this area include illegal camp fires, marijuana cultivation, long-term occupancy, and vandalism.

Other Areas: Unlawful activity has been reported elsewhere within the ISRMA including vandalism to a barn, cabin, several gates, and a fishing camp near Big Gulch, Mad Mule Mine and Cedar Gulch. Marijuana cultivation has been reported within several areas of the ISRMA.

Law Enforcement Agreements: Each year, BLM's Redding Resource Area and the National Park Service's Whiskeytown Unit enter into a cooperative relationship through a Law Enforcement Agreement (LEA). The LEA allows BLM to reimburse National Park Service for services rendered related to dispatching and providing criminal offender record information. The LEA also allows BLM and/or National Park Service peace officers to support one another through back up or initial action at the request of either agency. Although not specified within the LEA, National Park Service maintains duplicate files of arrest warrants held by BLM.

On June 1, 1993 BLM's Redding Resource Area and Shasta County's Sheriff entered into a cooperative relationship through a Memorandum of Understanding (MOU) which can last indefinitely. The MOU grants designated BLM law enforcement officers the authority to enforce state and local laws in areas adjacent to, or on BLM administered public lands. The MOU also authorizes designated BLM officers to initiate investigations and to protect crime scenes at the request of the Sheriff (pending the arrival of the state or local agency having primary jurisdiction). Finally, the MOU authorizes designated BLM officers to respond to requests for assistance by the Sheriff.

On May 21, 1994 BLM's State Director, Bureau of Reclamation's Regional Director and Shasta County entered into a cooperative relationship through a Cooperative Management Agreement (CMA) which can last indefinitely. The CMA authorizes BLM officers to enforce Federal regulations on most Bureau of Reclamation lands between Shasta Dam and Keswick Dam. The CMA also authorizes certain BLM officers to enforce state and local laws on Bureau of Reclamation lands designated within the CMA. Finally, the CMA provides a framework for cooperation and formally establishes a relationship between the entities in the development of the ISRMA plan.

Private Landowner Liabilities/Trespass

Many private landowners consulted prior to the development of this plan were concerned with potential liabilities arising from public recreation usage near (or in some cases on) their private land. Trails and roads within this vast area cross private and public land and have been used by the recreating public for decades. Public agencies such as BLM, National Park Service, Forest Service and Bureau of Reclamation have attempted to manage and promote recreational opportunities in a responsible manner. While many private landowners tolerate public recreation on their lands, others take actions to prohibit public use.

The following information is provided to inform the reader of private landowner liabilities

and trespass issues related to recreation within the ISRMA. The discussion is not an attempt to persuade private landowners to keep their lands open for public recreation, but is meant to inform readers of case law applicable to recreation involving lands at the private/public interface. The discussion is time sensitive and includes: 1) liabilities of private landowners to injuries sustained by recreating public; and 2) public trespass on private land.

Landowner Liabilities to Injuries: Section 846 of the California Civil Code greatly limits the liability of private landowners for injuries sustained by uninvited and non-paying recreationists who use their lands. The recreational trespasser on private lands assumes the risk of injury, absent willful or malicious misconduct by the landowner (Hannon v. U.S. (E.D. Cal 1992) 801 F. Supp. 323, 327).

Under California law, the concept of willful misconduct has a well established, well defined meaning. "Willful or wanton misconduct is intentional wrongful misconduct, done either with a knowledge that serious injury to another will probably result, or with a wanton and reckless disregard of the possible results". (O'Shea v. Claude C. Wood Co. (1979) 97 Cal. App. 3d 903, 912 [159 Cal. Rptr. 125]); (Tomey v. United States (E.D. Cal. 1989) 714 F. Supp. 426, 427-428).

The courts have outlined the three elements essential to a finding of willful misconduct: 1) actual or constructive knowledge of the peril to be apprehended; 2) actual or constructive knowledge that injury is probable as opposed to possible, and 3) conscious failure to act to avoid the peril (Rost v. U.S. (9th Cir. 1986) 803 F.2d 448, 451, (Spire v. U.S. (9th Cir. 1986) 805 F.2d 832, 834), (Toomey v. United States (E.D. Cal. 1989) 714 F. Supp. 426, 428). The scope of recreational activities encompassed by this statute is not limited to activities which take place outdoors, does not exclude recreational activities involving artificial structures, nor is it limited to land "suitable" for recreational use (Ornelas v. Randolph (1993) 4 Cal. 4th 1095 [17 Cal. Rptr. 2d 594, 847 P.2d 560]). Landowners can control who uses their land for recreational purposes and that discretion does not result in the forfeiture of immunity which the recreational use statute provides (Mansion v. United States (9th Cir. 1991) 945 F.2d 1115).

Public Trespass on Private Land: In California, trespass on private land is defined in the California Penal Code Sections 602 and 602.8 and California Fish and Game Code Section 2016. The Penal Code under Section 602(m) considers driving a vehicle on private land without permission and known not to be open to the general public as a trespass. The Penal Code under 602.8 states that trespass occurs when the public enters, without written permission, private lands enclosed by a fence, or unfenced with the proper standard of no trespassing signs. Section 2016 of the Fish and Game Code states that trespass occurs when the public enters, without written permission, private lands enclosed by a fence, or unfenced lands with the proper standard of no trespassing signs, for the purpose of discharging any firearm or taking or destroying any mammal or

bird.

Some private landowners within the ISRMA have complained of vandalism, theft, residency, and dumping on their property within the ISRMA. These offenses are addressed within the Penal Code under several sections including sections dealing with trespass. Although these offenses may not be related to recreational use, private landowners wishing to exclude public recreationists should take special note of the proper standard for posting no trespassing signs. Section 602.8 of the Penal Code refers to posting standards where signs forbidding trespass are displayed at intervals not less than three to the mile along all exterior boundaries, and at all roads and trails entering the lands.

Surface Hydrology

The ISRMA consists of approximately 19 significant watersheds. A watershed represents the area drained by a stream and its tributaries and is bound by a divide. In analyzing the hydrologic conditions within the ISRMA, BLM constructed an overlay using the Strahler method of describing the hierarchy of streams, reviewed numerous documents addressing water quality and consulted with various agencies. The following provides 1) an overview of surface water management within the ISRMA; 2) a discussion of watersheds and subwatersheds; and 3) a summary of water quality information.

Surface Water Management: The ISRMA encompasses Shasta Dam, Keswick Dam, Spring Creek Debris Dam, Spring Creek Tunnel, small impoundments and other water diversions. The Bureau of Reclamation's operation of the Trinity River and Sacramento River divisions of the Central Valley Project significantly influences management options/opportunities within the ISRMA. Water diversions and acid mine drainage treatments related to Iron Mountain Mine also influence management options/opportunities as do existing impoundments for drinking water purposes.

The Trinity River and Sacramento River divisions of the Central Valley project are crucial in providing water to the central valley and electricity to northern California. Operation of the Central Valley Project includes the following:

Shasta Dam, Power Plant and Lake. The key feature in the Shasta Field Division is Shasta Dam, a concrete-gravity structure 602 feet tall. Shasta Powerplant has five main hydroelectric generators with a total output of 570,000 kilowatts. Shasta Lake has a storage capacity of 4,552,000 acre feet and primary inflow is from the Pitt, McCloud and Sacramento Rivers. When generating hydropower or spilling water, the water is released into Keswick Reservoir.

Keswick Dam, Powerplant, and Reservoir. Keswick Dam is a concrete gravity structure, 159 feet tall and located eight miles below Shasta Dam. The powerplant has three hydroelectric generators with a total output of more than 90,000 kilowatts. Keswick

Reservoir has a storage capacity of 23,800 acre-feet and is a regulating reservoir for releases from Spring Creek and Shasta Powerplants.

Spring Creek Power Plant. Spring Creek Powerplant is located just above Keswick Dam and has two hydroelectric generators with a total output of 192,000 kilowatts. Water from Whiskeytown Lake travels through a three mile long tunnel into the powerplant which discharges into Keswick Reservoir.

Spring Creek Debris Dam and Reservoir. Spring Creek Debris Dam is an earthfill dam with a height of 196 feet. It is located on Spring Creek above the tailrace of Spring Creek Powerplant. The reservoir has a capacity of 5,900 acre-feet. The debris dam was constructed to control sediment and debris above Spring Creek Powerplant and to regulate acid mine drainage from Iron Mountain Mine.

Clair A. Hill Whiskeytown Dam and Whiskeytown Lake. Whiskeytown Dam, located on Clear Creek, is a 282 foot tall, earthfill dam. Whiskeytown Lake, which has a storage capacity of 241,000 acre-feet, receives most of its inflow from Judge Francis Carr Powerplant. It receives a lesser amount of natural inflow from Clear Creek.

Judge Francis Carr Powerplant. Carr Powerplant has two hydroelectric generators and a total output of 154,000 kilowatts. Water is diverted from Lewiston Lake, through the 11 mile long Clear Creek Tunnel, into Carr Powerplant and discharged into Whiskeytown Lake.

Trinity Dam, Powerplant, and Clair Engle (Trinity) Lake. Trinity Dam is a 538 foot tall, earthen dam on the Trinity River. The powerplant has two hydroelectric generators with a total output of 140,000 kilowatts. The lake has a storage capacity of 2,448,000 acre-feet.

Lewiston Dam, Powerplant, and Lake. Lewiston Dam, located seven miles below Trinity Dam, is a 91 foot tall, earthen dam. Lewiston Powerplant has a single hydroelectric generator with a total output of 500 kilowatts. The lake has a storage capacity of 14,700 acre-feet and is both a regulating reservoir for the Trinity Project and forebay for Carr Powerplant.

Other Diversions or Impoundments: Treatments of acid mine drainage from Iron Mountain Mine have led to additional diversions of water. Spring Creek is diverted into South Fork of Flat Creek before its confluence with Boulder Creek and Slickrock Creek. This diversion routes relatively clean waters away from acid mine drainage generated at Iron Mountain Mine. The upper reaches of Slickrock Creek have also been diverted around acid mine drainage sources to the lower reaches of Slickrock Creek.

Several landowners near Iron Mountain Road utilize a Flat Creek water impoundment as

their water source. The impoundment is located on North Fork Flat Creek, just upstream from its confluence with South Fork Flat Creek.

Watersheds: The Sacramento River/Keswick Reservoir watershed and the Clear Creek/Whiskeytown Lake watershed separate the ISRMA into two nearly equal portions. The Clear Creek watershed encompasses the Bear Creek, Big Gulch, Cedar Gulch, East Fork of Clear Creek, Cline Gulch, Grizzly Gulch, Whiskey Creek and other smaller drainages. The Sacramento River watershed encompasses the North Fork Squaw Creek, South Fork Squaw Creek, Cottonwood Creek, Motion Creek, Flat Creek, Spring Creek, Boulder Creek, Slickrock Creek and other smaller drainages.

Water Quality: Water quality is monitored within the ISRMA by a variety of agencies for different reasons. The California Department of Fish and Game, California Regional Water Quality Control Board, California Department of Health Services, Bureau of Reclamation, U.S. Geological Survey, National Park Service, and others conduct some water quality sampling within the ISRMA.

Little quantitative information is available regarding water quality in the Clear Creek watershed portion of the ISRMA. Generally, water quality is very good within the Clear Creek watershed influenced mostly by timber harvest operations, fire and residential development within the western margin of the ISRMA. Most qualitative information available relates to acid mine drainage problems within the Sacramento River watershed. A water quality overview is provided below:

Squaw Creek: The South Fork of Squaw Creek is sterile from the Early Bird portals downstream through its confluence with the North Fork of Squaw Creek into Shasta Lake. Acid mine drainage from the mine workings has caused fish kills in Shasta Lake. On May 11, 1994 approximately 100 dead and dying fish were observed at the mouth of the creek.

Since 1980, the landowner and mine owners having been working with the California Regional Water Quality Control Board to control discharges. Although there have been no human health restrictions identified within this creek, there have been scattered reports of sickness caused by eating dead or dying fish. The South Fork of Squaw Creek above the Early Bird Mine supports fish, as does the North Fork of Squaw Creek above the confluence with the South Fork.

Spring Creek: Acid mine drainage from Stowell Mine eliminates fish life from the mine downstream to Iron Mountain Mine. Point source treatments at Stowell Mine have led to an improving condition and Spring Creek is expected to recover. Below Iron Mountain Mine, Spring Creek is diverted into the South Fork of Flat Creek. Water quality above Stowell Mine is normally good, although flows are seasonally limited.

Flat Creek: The North Fork of Flat Creek has relatively good water quality and supports some fish life. The South Fork of Flat Creek has some acid mine drainage contamination from Spring Creek but is recovering.

Boulder Creek: Water quality in Boulder Creek is variable and partially dependent on rainfall, operation of the Boulder Creek cementation plant, seeps, tailing piles and subsurface flow. Acid mine drainage from the Iron Mountain Mine makes Boulder Creek sterile through its confluence with Slickrock Creek.

Slickrock Creek: Water quality in Slickrock Creek is variable and is partially dependent upon rainfall, operation of the Slickrock cementation plant, seeps, tailing piles, subsurface flow, and water diversions from Iron Mountain Mine. Acid mine drainage from Iron Mountain Mine makes Slickrock Creek sterile through its confluence with Spring Creek to Keswick Reservoir.

Noise Environment

Noise is often defined as unwanted or undesired sound. Because the attitudes and values of people are variable, sounds which are considered undesirable vary from person to person. For this reason, a comprehensive discussion regarding current noise levels and acceptable noise standards is difficult to quantify. For further information regarding noise, readers are encouraged to refer to Noise Effects Handbook - A Desk Reference to Health and Welfare Effects of Noise (EPA, July 1981). The following includes: 1) overview of sound measurement; 2) sound sources within the ISRMA; 3) various noise standards applicable to the ISRMA; and 4) settings which are sensitive to noise intrusion.

Overview of Sound Measurement: Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. The pressure fluctuation is caused by vibrating objects and is received by the ear and perceived by the brain as sound. The intensity (or loudness) of a sound is the amount the pressure fluctuates above or below atmospheric pressure. A logarithmic scale, called the decibel (dB) scale, is used to compress this wide range.

Decibels are measured on several scales with the "A weighting" being one of the most useful measures. In practice, the "A-level" of a sound source is measured using a sound meter that includes an electrical filter corresponding to the "A-weighted curve". Although the "A-level" may adequately describe sound at any instant in time, community sound levels vary continuously. To describe the time varying character of environmental sound, a statistical descriptor such as L_{dn} , is often used. This descriptor divides the 24 hour sound day into the daytime and nighttime. The L_{dn} is calculated by logarithmically summing the hourly daytime and weighted nighttime steady-state sound levels L_{eq} .

Several factors influence human perception and sensitivity to sound. The duration of a sound certainly influences whether it is objectionable (noise), as does the character of the

sound (rhythmic versus random). Sound levels decrease by about 6 dBA as your distance from the sound source doubles. Finally, temperature, elevation, humidity, foliage, wind and ground unevenness often contribute to the intensity of a sound.

Sound Sources Within the ISRMA: Sound is generated within the ISRMA from a variety of sources. Airplanes, firearms, automobiles, motorcycles, ATV's, motorboats, jetskis, construction equipment, machinery, people, wind, wildlife, and water all generate sound in the outdoors. Furthermore, televisions, garbage disposals, telephones and other household appliances generate sound in the indoors.

A normal daily sound level is difficult to define and is quite variable from one community to the next. One study showed an average exposure of $L_{eq} = 75$ dBA (Schori, A Real World Assessment for Noise Exposure, 1978). Little information is available regarding long-term sound exposure within the ISRMA. Highway 299 L_{dn} sound values range between 62 dBA to 67 dBA at a distance of 50 feet. At greater distances from highways, the ambient noise environment expressed in L_{dn} values is 50 dBA or less (Land Use Opportunities and Constraints in Shasta County, 1980).

Noise Standards Within the ISRMA: Individual sound levels (such as those measured by dBA) and time varied sound levels (such as those measured in L_{dn} or L_{eq}) have various standards applicable within the ISRMA. Off-highway motor vehicles (OHV's) which are operated within the State of California are required under Section 38370 of the California Vehicle Code to meet maximum allowable noise standards. Powerboats operated on Shasta Lake and Whiskeytown Lake are codified under Section 654.05 of the State of California Harbor and Navigation Code. The noise standards, measured 50 feet from the vehicle or boat, are depicted within Table 3.7.

In practice, BLM and the Forest Service enforce OHV noise standards within the Chappie/Shasta OHV Management Area using a test established by the Society of Automotive Engineers as directed by the State Vehicle Code under Section 38370. The test is conducted 20 inches from the exhaust of an OHV (at test rpm's) and produces more accurate results than measuring 50 feet away from the vehicle. Using this test procedure, OHV's manufactured before 1975 must not exceed 105 dBA, and OHV's manufactured after 1974 must not exceed 101 dBA.

In addition to State Vehicle Codes, National Park Service has adopted noise regulations applicable to vessels and audio devices. Noise standards for vessels are found within 36 CFR 3.7 and prohibit the operation of vessels which exceed noise levels of 82 dBA measured at a distance of 82 feet. Noise standards for audio devices are found within 36 CFR 2.12 and prohibit audio equipment or machinery which exceed noise levels of 60 dBA measured at 50 feet. The 36 CFR 2.12 noise standard regarding audio devices is rarely enforced on motor vehicles within the Whiskeytown Unit because background noise levels are continuous due to Highway 299 and the regulation deviates so much from the

Table 3.7
Various State Codes Regarding Acceptable Noise Levels

Motorized Equipment	Maximum Noise Level
Off-highway motor vehicles manufactured prior to 1973	92 dBA
Off-highway motor vehicles manufactured 1973 through 1974	88 dBA
Off-highway motor vehicles manufactured 1975 through 1985	86 dBA
Off-highway motor vehicles manufactured after 1985	82 dBA
Powerboats manufactured prior to 1976	86 dBA
Powerboats manufactured 1976 through 1977	84 dBA
Powerboats manufactured after 1978	82 dBA

Finally, Shasta County is required to include a noise element within their General Plan under the provisions of Government Code 65302(f). Although the County does not have a standard regarding a majority of the land-uses found within the ISRMA, the code establishes standards for industrial and residential areas. Industrial areas are not to exceed a L_{dn} of 65 dBA and residential areas are not to exceed a L_{dn} of 55 dBA.

Noise Sensitive Settings: Some private land settings encompassed by the ISRMA are more sensitive than others to noise levels. The communities of French Gulch and Keswick located at the margins of the ISRMA have the greatest amount of residential land which would be sensitive to noise. Residential land at the eastern edge of the ISRMA (near City of Lake Shasta) is generally separated by a ridge which would screen most noise generated within the ISRMA. Other locations containing homes, such as near East Fork Road and Iron Mountain Road, would also be sensitive to noise generated within the ISRMA. Readers should note that sound dissipates rapidly in mountainous terrain and many uses can be compatible within only a short distance if noise is a concern.

Noise levels are also a consideration of public land managers in regards to the type of recreation experience being provided. Recreation settings are often managed under various spectrums (regimes) such as Primitive, Semi-Primitive, Natural, Rural and Urban. Each setting has different noise levels which are acceptable with Primitive being the most restrictive and Urban being the least.

Acid Mine Drainage

Some of the geologic formations occurring within the ISRMA contain gold bearing quartz veins, associated placer deposits, and massive sulfide deposits. This mineral character of the ISRMA supported the establishment of several mining districts during the 1800's including the West Shasta, Whiskeytown, and French Gulch. Mining of massive sulfide deposits within the ISRMA has contributed to acid mine drainage problems which continue to impact water quality within the region.

The following describes acid mine drainage problems within the area and the resource impacts associated with these problems. BLM and other ISRMA cooperating agencies purposely chose to abbreviate this discussion because more complete information is readily available within other documents available from the U.S. Environmental Protection Agency, U.S. Bureau of Reclamation and California Regional Water Quality Control Board. The following includes: 1) an overview of acid mine drainage; 2) mining activity within the ISRMA; 3) acid mine drainage problem areas; and 4) health risks associated with acid mine drainage.

Acid Mine Drainage: Acid mine drainage is acidic water which is often contaminated with heavy metals including copper, zinc and cadmium. Acid mine drainage is created when rainwater or groundwater percolates through a mineralized zone found in underground mine workings, waste rock dumps or tailing piles associated with mining operations. Acid mine drainage causes low pH conditions and heavy metal contamination which can be toxic to aquatic life. Readers interested in learning more about acid mine drainage and the chemical processes involved are encouraged to refer to "An Evaluation Of Problems Arising From Acid Mine Drainage In The Vicinity of Shasta Lake, Shasta County, California", U.S. Geological Survey, 1978.

Mining Activity: Excluding Iron Mountain Mine which will be discussed briefly below, the ISRMA has approximately 100 adits, shafts, mines or tailing piles which appear on 7.5 minute, quadrangle maps covering the area. These sites have been placed onto an overlay available for review at the BLM office in Redding. The overlay is helpful in identifying current or potential acid mine drainage problem areas.

Mining related features have been identified within the following watersheds or areas: Big Gulch (9 features), Cedar Gulch (2 features), Red Hill Gulch (1 feature), East Fork Clear Creek (10 features), Cline Gulch (16 features), Drunken Gulch (1 feature), State Gulch (9 features), Clear Creek north of French Gulch (2 features), Clear Creek south of French Gulch (5 features), Grizzly Gulch (8 features), New York Gulch (4 features), Whiskey Creek (6 features), Squaw Creek (15 features), Motion Creek (2 features), east side of Sacramento River (5 features), upper Spring Creek (2 features), and South Fork Spring Creek (2 features).

Acid Mine Drainage Problem Areas: Acid mine drainage problem areas are discussed here in detail by the mining complex associated with the contamination. In the ISRMA, all known acid mine drainage problems occur at abandoned massive sulfide mines. Discharge is currently being treated or monitored at all of the sites described. Mines contributing acid mine drainage include Iron Mountain Mine, Stowell Mine, Balaklala Mine and Keystone Mine.

Iron Mountain Mine is located within the Spring Creek drainage and has been a Federal Superfund site since 1983. This gold, copper and zinc mine was active from 1890 until

1940. Acid mine drainage from underground workings, waste rock dumps and tailing piles have eliminated life within Slickrock, Boulder and Spring Creek below the mine. Iron Mountain Mine's discharge of copper (200,000 lbs/year) and zinc (800,000 lbs/year) makes it a major source of metal into the Sacramento River. Between 1992 and 1993, Iron Mountain Mine's metal discharge into Spring Creek was reduced by approximately 50 percent with the operation of a temporary treatment plant.

Treatment or control of the Iron Mountain Mine discharge dates back to the construction of Spring Creek Reservoir (1963), capping the Brick Flat Pit (1963), diverting Slick Rock Creek (1989), diverting Spring Creek (1991), emergency neutralization of acid mine drainage discharge (1990-1993), and construction of a permanent treatment plant (1994).

Future treatments of the Iron Mountain Mine site may include the enlargement of the Spring Creek Debris Dam which is discussed in detail within an Environmental Analysis prepared by the U.S. Bureau of Reclamation for the Environmental Protection Agency in May of 1994. Readers are encouraged to read this document for further information regarding the enlargement proposal and anticipated impacts.

Stowell Mine is located within the Spring Creek drainage upstream from Iron Mountain Mine. This copper mine was active in the early 1900's and has been a source of acid mine drainage attributed to portal leakage and surface runoff from a dump. The discharge of copper and zinc (1,000 lbs/year) eliminates fish life within a 5 mile segment of Spring Creek stretching to Iron Mountain Mine.

Remediation of the discharge began in 1991 with the installation of a bulkhead on an upper portal. Acid mine drainage behind the bulkhead is now leaking from a separate set of mine workings down slope. The landowner is currently sealing a lower portal to stop this discharge.

Balaklala Mine is located within the South Fork Squaw Creek drainage and was an active copper mine from 1900 to 1928. Acid mine drainage discharge from the Balaklala, Weil, Shasta King and Early Bird portals eliminates fish life within the South Fork of Squaw Creek and causes fish kills in Shasta Lake.

Prior to remediation, discharge of copper (80,000 lbs/year) and zinc (80,000 lbs/year) was a major problem. Today discharges have been lowered to 7,000 lbs/year for both copper and zinc. Leakage continues to occur near bulkheads at the Balaklala, Early Bird, and Shasta King portals.

Keystone Mine is located within the South Fork Squaw Creek drainage above the main workings of the Balaklala Mine and was an active copper mine from 1900 to 1925. Acid mine drainage from the main Keystone portal contributes to metal contamination within South Fork Squaw Creek and Shasta Lake. The copper discharge (2,000 lbs/year) and

zinc discharge (4,000 lbs/year) contributes to fish kills within the creek and lake.

Remediation of the mine workings began in 1993 when a bulkhead was installed on a main portal and two higher portals. Leakage currently occurs through fractures near the bulkhead and through the ground up slope of the bulkhead. To address the problem, the landowner is sealing the fracture leaks near the bulkhead.

Human Health Risks: Although little information is available regarding human health risks associated from acid mine drainage generated by the Balaklala, Stowell and Keystone mines, there is considerable information available regarding acid mine drainage generated by Iron Mountain Mine. A Public Health Endangerment Assessment (EPA, 1991) and an Environmental Endangerment Assessment (EPA, 1992) were completed for Iron Mountain Mine. Major findings from both studies are discussed below.

Iron Mountain Mine is releasing large quantities of contaminants to the environment (primarily surface water) via acid mine drainage. The acid mine drainage is characterized by a low pH (1 to 3) and high concentrations of heavy metals. Cadmium, copper, zinc and pH are water quality parameters most endangering to human health. Certain concentrations of cadmium, copper, zinc and a low pH can be dangerous when consumed or in contact with human skin.

Acid mine drainage contaminants are transported by surface waters primarily. The acid mine drainage enters Boulder and Slickrock Creeks, and these two creeks discharge into Spring Creek which flows into the Sacramento River at Keswick Reservoir. Contaminants of concern can be biologically transported through the aquatic food chain. For example, the initial uptake could be by phytoplankton, periphthon, and other aquatic vegetation. These food sources could be ingested by benthic invertebrates and/or zooplankton. The plankton and benthic invertebrates could be ingested by birds, animals and humans.

Although copper and zinc are known to be essential mineral nutrients for both humans and fish, excessive intake can be toxic. The National Academy of Sciences has determined that the safe dietary intake of copper and zinc for humans is approximately 2 to 3 mg/day and 15 mg/day respectively. There no standards for skin exposures to high concentrations of metals in surface waters.

Individuals who enter the Iron Mountain Mine site are at risk if they have direct contact with or ingest the acid mine drainage. The risk of such exposure is limited by controlled access to the mine. Children are at somewhat greater risk than adults, when considering noncancer toxicity resulting from incidental ingestion of creek water downstream from Iron Mountain Mine. Individuals who come in direct contact with water or sediments from the main body of Keswick Reservoir or Sacramento River are currently not at risk. Finally, individuals who consume fish from the main body of Keswick Reservoir may currently be at some risk, especially if fish livers are consumed.

Air Quality

The ISRMA is within the Northern Sacramento Valley Air Basin (NSVAB) which is bound on the east, west and north by mountain ranges. The geographical setting of the NSVAB, combined with inversions and warm temperatures typical of the summer months, creates a high potential for air pollution, particularly at elevations below 1,000 feet. The air pollution potential of an area is its relative ability to dilute and disperse pollutants and is influenced by topography, wind and atmospheric stability. The following includes: 1) air quality standards applicable to the NSVAB; 2) sources of air pollutants within the ISRMA; and 3) settings which are sensitive to air pollution.

Air Quality Standards: National air quality standards for carbon monoxide (CO), ozone, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead and particulate matter less than 10 microns (PM₁₀) are established within the Federal Clean Air Act as shown in Table 3.8. California air quality policies are overseen by the California Air Resources Board, which established the California Ambient Air Quality Standards in 1969. The State standards are generally more stringent than the National Standards. In Shasta County, the Shasta County Air Quality Management District (SCAQMD) has permit authority over all stationary sources of air pollutants and helps oversee the Northern Sacramento Valley Air Basin 1991 Air Quality Attainment Plan (AQAP).

The SCAQMD maintains an ambient air quality monitoring station in Redding and monitors PM₁₀, ozone, and NO₂. Currently, CO, SO₂, and lead levels are not measured by the SCAQMD. The 1991 AQAP indicated that SCAQMD is not in attainment for both ozone and PM₁₀ by California standards although Federal standards were met.

Sources of Air Pollutants: Air pollution within, or attributed to, the ISRMA comes from a variety of different sources. Particulate matter (PM₁₀) is generated by wildfire, slash burning, fireplaces in homes, motorized travel over dusty roads, and pollen. NO₂ is a reddish brown gas and is one of the oxides of nitrogen that results from combustion. Major sources of NO₂ include vehicles travelling over Highway 299, Highway 151 and other roads and trails within the ISRMA. CO is formed by the incomplete combustion of fuels and its main source is automobiles. SO₂ is a poisonous gas created when sulfur fuel is burned and is not generated significantly within the ISRMA. Finally, lead is found in the atmosphere in the form of lead salt and its primary sources are motor vehicles burning leaded gasoline.

Table 3.8
Ambient Air Quality Standards

Pollutant	Averaging Period	California Ambient Air Quality Standards	National Ambient Air Quality Standards (NAAQS)	
			Primary	Secondary
Ozone	1 hour	0.25 ppm	0.12 ppm	0.12 ppm
CO	8 hours	9.0 ppm	9 ppm	-----
	1 hour	20 ppm	35 ppm	-----
NO ₂	Annual average	-----	0.053 ppm	0.053 ppm
	1 hour	0.25 ppm	-----	-----
SO ₂	Annual average	-----	0.03 ppm	-----
	24 hours	0.05 ppm	0.14 ppm	-----
	3 hours	-----	-----	0.5 ppm
	1 hour	0.25 ppm	-----	-----
PM ₁₀	Annual geometric mean	30 micrograms/m ³	-----	-----
	Annual arithmetic mean	-----	50 micrograms/m ³	50 micrograms/m ³
	24 hours	50 micrograms/m ³	150 micrograms/m ³	150 micrograms/m ³
Lead	Calendar quarter	-----	1.5 micrograms/m ³	1.5 micrograms/m ³
	30 days	1.5 micrograms/m ³	-----	-----

Source: California Air Resources Board

Settings Sensitive to Air Pollution: Because of the mountainous terrain of Shasta County, which can restrict horizontal dilution of pollutants, the frequency of inversions that restrict vertical dilution, and the relatively high frequency of calm winds, the air pollution potential of Shasta County is quite high. In a nationwide survey of air pollution potentials, the interior of northern California was found to have one of the highest potentials for air pollution in the United States (Land Use Opportunities and Constraints in Shasta County, 1980). One only has to drive through the valley following a nearby wildfire to understand the severity of the air pollution situation.

The cities of Redding and Shasta Lake have the greatest potential of being influenced by air pollution generated within the ISRMA. Because prevailing winds within the Shasta County area are northwestern (31.6%) and northern (12.4%), air pollution generated within the ISRMA may travel directly over Redding, the city of Shasta Lake, and Whiskeytown Lake. The community of Keswick is also within the prevailing wind direction path and susceptible to air pollution. Finally, the community of French Gulch, located to the west of the ISRMA, is less sensitive to air pollution generated in the ISRMA due to the direction of prevailing winds and frequent canyon breezes.

Vegetation

Vegetation within the ISRMA reflects geologic, hydrologic, climatic and managerial

variations. When analyzing plant communities within the ISRMA, BLM categorized vegetation using Series Description of California Vegetation by Sawyer, 1994. The following includes: 1) plant communities within the ISRMA; 2) forest location and conditions; 3) lands capable of timber production.

Plant Communities: Vegetation within the ISRMA has been greatly influenced by human activities. Most ISRMA vegetation within the Sacramento River watershed was destroyed by 1920 from toxic fumes generated by smelters located at Keswick, Coram and Kennett. Although revegetation efforts have been successful at reducing erosion, natural plant communities have been replaced largely by exotic species in some areas or differing patterns from pre-mining days. Vegetation within the Clear Creek watershed has been altered to a lesser extent by timber harvest and fire suppression practices. The five major plant communities within the ISRMA include the whiteleaf manzanita series, the canyon live oak series, the black oak series, the Douglas-fir/ponderosa pine series and the Douglas-fir series.

Whiteleaf manzanita series is found in shallow soils, on south and southwest slopes at elevations between 450 to 600 feet. This is the most common plant community within the ISRMA and includes whiteleaf manzanita (*Arctostaphylos viscida*), chamise (*Adenostoma fasciculatum*), common manzanita (*Arctostaphylos manzanita*), canyon live oak (*Quercus chrysolepis*), Freemont silk tassel (*Garrya fremontii*), greenleaf manzanita (*Arctostaphylos patula*), mountain whitethorn (*Ceanothus cordulatus*), ocean spray (*Holodiscus discolor*), service berry (*Amelanchier alnifolia*), scrub oak (*Quercus berberidifolia*) tobacco brush (*Ceanothus velutinus*), and wedgeleaf ceanothus (*Ceanothus cuneatus*).

Canyon live oak series (CLOS) is found in shallow, well drained soils within the ISRMA at elevations between 1,400 to 6,400 feet. The most common species within the CLOS is the canyon live oak, bigleaf maple (*Acer macrophyllum*), deer brush (*Ceanothus integerrimus*), black oak (*Quercus kelloggii*), California bay (*Umbellularia californica*), coulter pine (*Pinus coulteri*), Douglas-fir (*Pseudotsuga menziesii*), goldback fern (*Pentagramma triangularis*), incense cedar (*Calocedrus decurrens*), lemmon catchfly (*Silene lemmonii*), madrone (*Arbutus menziessi*), narrowleaf sword fern (*Polystichum imbricans*), Oregon white oak (*Quercus garryana*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), and white fir (*Abies concolor*).

Black oak series (BOS) covers a wide elevational range and is associated with moderately to excessively drained soils of medium depth. The BOS is usually associated with deeper soils than the CLOS and is often scattered among conifer forests. The major species include black oak, deer brush, madrone, poison oak (*Toxicodendron diversiloba*), ponderosa pine, California bay, canyon live oak, coast live oak (*Quercus agrifolia*), Douglas-fir, grass nut (*Triteleia laxa*), greenleaf manzanita, jeffrey pine (*Pinus jeffreyi*), incense cedar, knobcone pine (*Pinus attenuata*), madrone, ocean spray, Oregon white oak, storax (*Styrax officinalis*) and valley oak (*Quercus lobata*).

Douglas-fir/ponderosa pine series (DFPPS) is found in deep soils that are derived from granite, schist, or ultramafic. The DFPPS ranges from 1,900 to 5,800 feet and is located on all aspects except a moist, very shaded northern aspect. The major species include Douglas-fir, ponderosa pine, sugar pine (*Pinus lambertiana*), incense cedar, bigleaf maple (*Acer macrophyllum*), black oak, canyon live oak, jeffrey pine, one-sided bluegrass, and Oregon white oak.

Douglas-fir series (DFS) is found on northern slopes throughout the ISRMA. The DFS is located in granite, sandstone, serpentine, schist, and volcanic derived soils at elevations of 2,200 to 8,600 feet. The main species included in this series are Douglas-fir, chinquapin (*Chrysolepis chrysophylla*), ponderosa pine, and Pacific dogwood (*Cornus nutallii*).

Forest Location and Condition: Most forests within the ISRMA are on northern aspects within the Clear Creek watershed at elevations above 2,000 feet. The commercial species found within the forests include Douglas-fir, ponderosa pine, sugar pine, incense cedar and white fir. Red fir is seldom found within the ISRMA because the elevation does not exceed 4,900 feet.

Forest conditions vary by ownership. Most corporate private land that has been managed for timber production has been clearcut or selectively logged several times. Some corporate land within the northern portion of the ISRMA is relatively pristine due to poor access, infeasible logging, or stream protection zones. Most clear cuts found on corporate land have been planted with ponderosa pine or Douglas-fir and are well stocked. Several areas which have been selectively logged have been overtaken by canyon live oak or other brush species.

BLM and Forest Service lands within the ISRMA have not been harvested heavily. BLM conducted one timber harvest in 1980 using an individual tree selection method. The area is now adequately stocked and in an uneven aged condition. Forest Service lands within the ISRMA have been mainly harvested using sanitation or salvage cuts.

Lands Capable of Timber Production: BLM and the Forest Service consider commercial forested land as being capable of producing 20 cubic feet of timber, per acre, per year and not being excluded from timber production. Lands capable of producing to this standard within the ISRMA are mostly at elevations above 2,500 feet and would include lands with a Dunning Site Class of V or better. The most productive lands are located on northern aspects within the Big Gulch and East Fork Clear Creek watersheds.

Corporate landowners possess large blocks of "timberland" within the Big Gulch, East Fork Clear Creek and Squaw Creek drainages. Timberland is defined by the Public Resources Code as land which is available for, and capable of, growing a crop of trees

of any commercial species used to produce lumber and other forest products. In most cases, timberland would include lands with a Dunning Site Class of V or better. Many of the timberlands managed by corporate landowners in the ISRMA are managed for mineral production as well.

Soil Resources

In describing the soil resources encompassed by the ISRMA, BLM referred to the Soil Survey of Shasta County, California published in 1974, the Soil Survey of Shasta-Trinity Forest Area, California completed in 1983 and Soil-Vegetation Maps. All sources are available for review at BLM's Redding office. The discussion includes: 1) soil associations/families within the ISRMA; 2) soil erosion potentials; 3) land-uses contributing to erosion; 4) soil acidity and metal contamination; and 5) hazards from soil contamination.

Soil Associations/Families: The ISRMA encompasses soils of the Josephine-Marpa-Sheetiron association (JMSA), Chaix-Corbett association (CCA), Maymen-Stonyford association (MSA), Auburn-Goulding-Neuns association (AGNA), Neuns-Deadwood-Marpa families (NDMF), and Henneke-Stonyford families (HSF). The JMSA is characterized by moderate to steep slopes, well-drained and somewhat excessively drained gravelly and very gravelly loams and clay loams underlain by sedimentary and metamorphic rocks. The CCA is characterized by gentle sloping to very steep, well-drained to excessively drained sandy loams and loamy course sands underlain by granitic rocks. The MSA is characterized by steep and very steep, somewhat excessively drained and well-drained gravelly loams and gravelly clay loams underlain by sedimentary, metamorphic, and metamorphosed basic rocks. The AGNA is characterized by flat to very steep, well drained gravelly loams, clay loams, and very gravelly silty clay loams underlain by partly metamorphosed volcanic rocks. The NDMF is characterized by gentle to steep slopes, well-drained gravelly loams and gravelly clay loams formed from metasediments and the HSF is characterized by moderate to steep slopes, well-drained gravelly loams and gravelly sandy clay loams formed on metasediments.

Soil Erosion Potentials: The ISRMA encompasses soils that have a slight, medium and high erosion potential. A map was constructed showing the erosion hazard ratings delineated within the Shasta County Soil Survey and the Soil Survey of the Shasta-Trinity Forest Area and is available at BLM's Redding office. Erosion hazard is defined as the probable susceptibility of a soil to surface erosion on a 30 to 50 percent slope when all vegetation cover is removed. The relative terms used are slight, moderate, high, and very high.

There were miscellaneous land types that were mapped within the Shasta County Soil Survey, but not given an erosion hazard rating. Land types such as colluvial land, mine dumps, rockland and riverwash were given a rating by BLM based upon their ability to erode and percent slope.

Approximately 17,800 acres of the ISRMA is classified with a high erosion hazard rating. Soils with this rating include colluvial and alluvial material found in narrow tracts along streams, drainages and slopes. Colluvial soils range from shallow to very deep overlying rock or compacted colluvium. These soils are excessively drained and have moderate permeability. Other soils with a high erosion hazard rating are located on steep slopes with excessive drainage and rapid permeability.

Soils with a high erosion hazard rating are scattered throughout the ISRMA. Notable regions characterized by these soils include the lower portions of the Spring Creek, Boulder Creek, and Slickrock Creek watersheds; and much of the Flat Creek watershed. These soils should not be disturbed unless mitigation measures are selected and implemented very carefully.

Approximately 53,400 acres of the ISRMA is classified with a moderate erosion hazard rating. Soils with this rating are dominate within the ISRMA and occur mostly on the slopes adjoining streams. They are normally well-drained to excessively drained, have moderate to rapid permeability, and runoff is slow to moderate.

Soils with a moderate erosion hazard rating dominate the ISRMA. Notable regions characterized by these soils include the east side of the Sacramento River, and midslopes within the Motion Creek, Cottonwood Creek, Squaw Creek, Big Gulch, Whiskey Creek, Grizzly Creek, Cline Gulch and East Fork Clear Creek watersheds. Projects that may impact these soils should include careful mitigation measures to decrease the potential for adverse effects on soil productivity and nearby water quality.

Approximately 3,200 acres of the ISRMA is classified with a slight erosion hazard rating. These soils are generally deep (greater than 36 inches) and have a high infiltration rate and a high rate of water transmission through the soil profile. They occur on slopes of less than 15 percent and are well drained. These soils are normally located along streams and ridge tops and are prevalent within the Squaw Creek and Whiskey Creek watersheds.

Land-uses Contributing to Erosion: Past and current land-uses have altered soil depth, fertility, acidity, water intake rates and vegetative cover. These factors have increased the susceptibility of most soils to erosion. While some watersheds encompassed by the ISRMA are still suffering from historical land-uses, other watersheds are impacted more by current land-uses.

The ISRMA encompasses portions of the Shasta County Copper Belt. Near the turn of the century (1896) Mountain Copper Company began processing large quantities of copper ore at their Keswick Smelter which was located on Spring Creek about one mile from the confluence with the Sacramento River. During the 1904 peak production year, this smelter processed over 1,000 tons of ore daily. The raw copper ore contained up to 45 percent sulfur.

The reduction process involved several methods including blast furnaces, stall and heap roasting. All of the methods resulted in the emission of sulfur dioxide (SO₂) which was emitted directly into the atmosphere. The resulting damage to surrounding vegetation was tremendous. The native plant cover of ponderosa pine, sugar pine, grey pine, oaks, shrubs and grasses was completely destroyed. Although this smelter was shut down in 1907, two others were in operation; one (Coram) near the current site of the OHVMA staging area and another in Kennett, now inundated by Shasta Reservoir.

Fumes generated by all three smelters affected vegetation within an area spanning 100 square miles. Most land within the Sacramento River watershed portion of the ISRMA was completely denuded and soil contamination still inhibits tree establishment in many areas. Without protective vegetation to help hold soil particles together, reduce surface water velocities, and alleviate raindrop impact, massive erosion occurred within the Keswick watershed between the early 1900's to the 1960's.

Road development within the ISRMA also contributes to soil erosion within the ISRMA. Over 200 miles of road was constructed within the ISRMA in support of mining and logging activity. Many of these roads can contribute to mass wasting by intercepting ground and surface water and diverting the water onto unstable land masses.

Other human-caused land disturbances contributing to erosion include residential clearing, timber harvesting, mining, and off-highway vehicle use. Erosion contributed by these sources can usually be mitigated to acceptable levels by using best management practices.

Soil Acidity and Metal Contamination: Fumes generated by smelter plants and acid mine drainage have had long-lasting impacts to soils within the ISRMA. Soil tests conducted by BLM and Bureau of Reclamation in December of 1994 verify that soil contamination within the ISRMA is persistent. Soil transects within the Spring Creek watershed indicate soil pH's between 3.5 and 7.0 with acidity levels being highest near drainages. Many samples contained high concentrations of arsenic, copper, lead, zinc and iron. Although overall soil contamination is greater within some watersheds, results are scattered and pockets of "good" soil can be found within even the most impacted watersheds.

In general, soil contamination is prevalent within the Spring Creek watershed and other watersheds containing point sources of acid mine drainage. Tailing piles, underground mine workings, and smelter locations within many of these areas have the highest metal deposits and acidity levels. A lack of plant cover is a good indication of soil contamination within these areas.

Hazards From Soil Contamination: Metal contamination and acidity can be lethal or harmful to plant, animal, and human life. Although elemental metal is found in all soil, high concentrations of the element (or its compounds) can be dangerous. Readers

interested in learning about metal contamination are encouraged to read Geologic Survey Bulletin 1466 entitled Element Concentrations Toxic to Plants, Animals, and Man (1979).

Soils and mining related wastes containing elevated concentrations of metals within the vicinity of Iron Mountain Mine and other mines are currently being treated. BLM, Bureau of Reclamation, Environmental Protection Agency and other agencies continue to evaluate additional areas which may be contaminated and assess the danger these areas possess.

Cultural Resources

The ISRMA encompasses lands that are administered by several public agencies and private landowners. In order to provide a cumulative description of cultural resources encompassed by the ISRMA, BLM assembled existing information available from public agencies, private landowners, various organizations, libraries, and human recollection. Information regarding cultural resources is presented in a greatly abbreviated form here. Readers interested in obtaining more complete information are encouraged to read public sources that are identified within the bibliography. The following discussion includes: 1) cultural resource legislation and compliance; 2) cultural resources background; 3) ethnogeographical resources; 4) archaeological and historical resources; and 5) sensitive cultural resource settings.

Legislation and Compliance: The National Historic Preservation Act (NHPA) of 1966 as amended specifies that all Federal agencies must consider the effects of their projects and programs on cultural resources listed or potentially listed on the National Register of Historic Places (NRHP). The NHPA also requires Federal agencies to inventory, evaluate, and, where appropriate, nominate all significant cultural resources under agency ownership to the NRHP. Finally, the NHPA requires agencies to consider impacts on properties that are eligible, or potentially eligible for inclusion within the NRHP in connection with the Advisory Council on Historic Preservation.

In addition to the NHPA, it is the policy of the United States under the American Indian Religious Freedom Act (AIRFA) of 1978 to protect and preserve the rights of Native American Indians to believe, express, and exercise their traditional religious beliefs. Prior to authorizing any surface disturbing action or approval of land-uses, Federal agencies solicit consideration of Native American Indians concerning any potential impact to traditional beliefs and heritage values.

The ISRMA plan is an intermediate level of planning and does not directly authorize the manipulation of resources. As mentioned within Chapter 1 (Introduction), site specific proposals will be developed in accordance with this plan and evaluated on a site specific basis. This level of planning is most useful in relation to cumulative or landscape impacts related to the NHPA and AIRFA.

This plan and environmental impact statement will be submitted to the State Historic Preservation Officer (SHPO) in addition to more detailed information compiled for the planning effort. Consultation with the SHPO will be centered around the evaluation of impacts which may be adverse to sites currently on the National Register of Historic Places, or those that have the potential to be listed. Consultation will be performed concurrently with the comment period established for the draft environmental impact statement. Local Native American groups were also consulted during the planning process pursuant to AIRFA.

Background: At the time of Euroamerican arrival, the ISRMA was occupied by Wintun speaking peoples. The Wintu, or Northern Wintun, were widespread inhabitants of the area. Within the ISRMA, three subgroups of Wintu are recognized. These divisions are based on geography: Nomtepom, upper Sacramento from Kennett north to above Lamoine; Elpom, Sacramento River from Kennett south to Redding; and Dau-nom, on the plains and hills west of Redding.

The environment that these peoples lived was much different from today's. The pre-mining environment is thought to have been well-forested with less chaparral and rich in both faunal and floral resources. The Sacramento River and its tributaries provided an abundant supply of salmon as well as suckers, eels, and mussels which were all part of the Wintu food supply. While deer were an important resource utilized by these peoples, rabbits, squirrels, quail, grouse, rodents and even insects were used for food. Acorns were the staple food, but various berries, seeds, nuts and tubers were used as well.

Wintu religion and mythology were intimately involved with the environment, with all natural features having significance. Places of unusual configuration were "holy" and some distinctive rock outcrops, caves, knolls and whirlpools were sanctified. Various locations throughout the ISRMA have been identified as Wintu places. These locations include mostly place names, but also resource use areas and historic habitation sites.

The Wintu suffered severely from Euroamerican contact which surged in the 1850's with the California Gold Rush. This was also the time government surveyors began laying out township, ranges, sections and mining properties. Early placer mining efforts during the Gold Rush were gradually, but not totally, replaced by later hydraulic, lode and dredge techniques.

The second major mining type found within the ISRMA was copper mining which became a major industry in the 1880's and replaced gold in 1896 as the number one mineral produced in Shasta County. Copper mining was relatively intense until 1947 with sound recovery until 1969. Peak productions occurred from 1897 to 1919 and again between 1924 and 1925. Copper smelting in connection with mining operations caused severe environmental damage within the ISRMA with experimental and full reclamation efforts beginning in 1922 and continuing today.

Water control and hydroelectric power development was another major industry within the ISRMA. Construction of Shasta Dam commenced in 1938 and additional communities formed within or near the ISRMA to support the workforce. Water management and development continued under the Central Valley Project with the construction of Keswick Dam, Whiskeytown Dam, Coleman Fish Hatchery, Trinity Dam, Lewiston Dam, Trinity River Hatchery, Clear Creek Tunnel, Judge Francis Carr Powerhouse, and Spring Creek Debris Dam.

Ethnogeographical Resources: The ISRMA is known to contain 43 place names, five habitation sites and two resource use areas which were important to the Wintu. No religious-mythological sites were identified through contact with the local Native American Indians or within various studies reviewed. There does not appear to be any such locations within the ISRMA that are potentially eligible for the National Register of Historic Places.

Archaeological and Historic Resources: Approximately 2,600 acres (or three percent) of the ISRMA has been surveyed for archaeological resources. Surveys have led to the recordation of 50 sites and two isolates. Forty-three of these locations are on public land and seven are on private land. Because only a fraction of the ISRMA has been surveyed, it is projected that several thousand archaeological sites are present within the ISRMA. Historic sites far outnumber prehistoric sites within the ISRMA.

In addition to recorded archaeological sites, 47 historic locations and/or facilities were evaluated in connection with the planning effort. These are locations that appear to stand out in terms of complexity and identification in the literature and their enumeration should not be considered exhaustive in terms of potentially important historic places. These properties include 29 mining complexes, seven townsites, two railroad complexes, two road/trail lineaments, two dams, and single locations of dredge tailings, a fire tower, and a hotel/post office/ferry crossing, Shasta Dam Beltway, and Coggins Lumber Mill. These 47 properties were evaluated together with the 52 archaeological sites for a total of 99 properties.

The 99 properties were evaluated under criteria established under 36 CFR 60.4 for possible inclusion within the National Register of Historic Places. The 99 properties include 66 historic properties, 33 prehistoric properties with one property having both components. Although the properties were evaluated based on their integrity, research and educational value, uniqueness, representative of a period or group or associated with a famous person, biogeographical significance, site complexity, and heritage value, formal determinations are most often hindered by a lack of information.

Of the 99 properties evaluated, 21 properties appear eligible, have been determined eligible, or are on the National Register of Historic Places. There are 20 properties that may be eligible, but are questionable because they have not been archaeologically tested

or because their integrity has not been ascertained. There are eight properties that may not be eligible, but are also questionable because they have not been tested. Another 26 properties do not appear to be eligible for the Register due to their low integrity or complexity. Finally, 24 properties were found to lack sufficient information to arrive at a reasonable assessment.

The ISRMA was also evaluated in terms of properties which may contribute to historical landscapes. Historical landscapes within the ISRMA reflect a consequence of the mining history, both from direct mining on the ground, and indirectly, through denudation of the landscape from smelter fumes and subsequent attempts at erosion control and revegetation. Although these historical landscapes are important, the low integrity of these dynamic landscapes indicate (with the possible exception of Iron Mountain Mine) that they are not eligible for the National Register of Historic Places.

Sensitive Cultural Resource Settings: Some areas within the ISRMA are more sensitive to impact because of the cultural resources they contain or may contain. Areas of high sensitivity include flats and terraces along all permanent drainages, especially the Sacramento River and Clear Creek and their major tributaries. These are locations of both prehistoric and historic settlement and use.

The community of French Gulch, Gladstone Mine, and the West Shasta Copper-Zinc Mining District, approximately corresponding to the formerly denuded landscape resulting from smelter fumes and areas where subsequent watershed improvement work has been conducted, are all culturally sensitive. Other areas of intense past human activity within the ISRMA are also sensitive and include the Southern Pacific Railway and its various bridges and tunnel, the Old Diggin's Railroad, the Sacramento River Canyon Road, and developments associated with Shasta and Keswick dams. Furthermore, there are localized places of cultural significance that do not fall within these settings.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES



Chapter 4: ENVIRONMENTAL CONSEQUENCES

This chapter describes the expected physical, biological and social consequences of implementing the land-use management alternatives described within Chapter 2 (Alternatives).

Introduction

Impacts are assessed on an Interlakes Special Recreation Management Area (ISRMA) wide basis as if each of the five generic land-use management alternatives was fully implemented. Only those resources, or resource use opportunities, that have been identified as having significant or important impacts are topics addressed within this chapter. The rationale for discounting additional topics from intensive analysis is described below. Because implementation of any alternative is requisite upon funding being available, and many actions could only be implemented if private land was acquired from willing sellers, impacts disclosed represent a worst-case scenario. Although this document discloses some cumulative impacts of the alternatives, BLM's Resource Management Plan and environmental impact statement which delineated the ISRMA discloses impacts on a regional or cumulative basis.

This chapter is organized to present the analysis methodologies and the predicted environmental consequences in a logical manner to the reader. First, the general assumptions serving as the basis for analysis are disclosed. Second, the impact topics are described. Third, the impact topics dropped from intensive analysis are identified. Forth, foreseeable development is explained. Fifth, the impacts common to all alternatives are discussed. Finally, the impacts of implementing the specific land-use management alternatives are discussed.

Assumptions For The Analysis

Environmental consequences, or impacts, were assessed by the interdisciplinary team identified within Chapter 5. To aid in the assessments, it was necessary to assume that certain events would reasonably occur. These assumptions serve as a foundation for assessment work and provide a basis for predicting direct, indirect and cumulative impacts. The assumptions are:

The No Action Alternative serves as a baseline for comparison in assessing all land-use management alternatives.

Actions for each land-use management alternative would be in compliance with all valid existing rights, Federal regulations, and BLM, National Parks Service, Forest Service and Bureau of Reclamation policies.

Recommendations made on Federal lands managed by the BLM, National Park

Service, Bureau of Reclamation and Forest Service would be adopted by those agencies.

Each land-use management alternative is feasible with adequate finances and personnel available to implement the decisions.

Any net unavoidable negative impacts would be continually evaluated during the life of the plan. Where necessary, adjustments in specific actions would be made to minimize consequential effects based on ISRMA monitoring.

Private land required to implement alternatives would be purchased from willing sellers within the ISRMA.

Impact Topics

Impact topics represent items of interest and concern that the public and land managers thought might be affected by actions identified within alternatives of the ISRMA plan. In order to provide a realistic assessment of impacts, the interdisciplinary team focused analysis on impact topics that were tangible and/or quantifiable. Impact topics relate to recreation opportunities, noise levels, motor vehicle traffic, air pollution, socio-cultural resources, soil erosion, spending and economic impact, private property, special status species, and the Whiskeytown deer herd.

Recreation Opportunities: Alternatives could enhance or diminish certain opportunities for recreation activities by expanding or reducing the land-base that those activities might occur on. This analysis quantifies each type of recreation activity that could be expected to occur under each alternative.

Noise Levels: Alternatives could enhance various uses that would alter noise levels within the ISRMA. This analysis describes the amount of noise that could be expected to occur within certain regions under each alternative.

Motor Vehicle Traffic: Alternatives could influence motor vehicle traffic within or into the ISRMA by concentrating recreation uses in certain areas. This analysis quantifies the amount of traffic that could be expected on select roads under each alternative. For analysis purposes, motor vehicle traffic estimates were generated using models that considered current traffic volumes, an average group size of 3.5 people, foreseeable parking area developments, looping potentials, and desired traffic flows.

Air Pollution: Alternatives could increase or reduce certain types of air pollution within the ISRMA by vegetative burning, and increasing or reducing motor vehicle traffic. This analysis quantifies each type of air pollution that could be expected to occur under each alternative. In evaluating air pollution levels, BLM utilized a model that correlated emission/generation rates of carbon monoxide (CO), oxides of nitrogen (NO_x), particulate

matter (PM₁₀), and oxides of sulfur (SO_x) with occurrences of motor vehicle travel on dirt roads.

Socio-Cultural Resources: Alternatives could increase the likelihood that some cultural resources would be damaged or destroyed within the ISRMA, or that some historic communities could be impacted by motor vehicle traffic. This analysis describes the projected impacts to socio-cultural resources that occur under each alternative.

Soil Erosion: Alternatives could influence the amount of soil erosion by increasing or decreasing the amount of soil disturbance or vegetative cover within the ISRMA. This analysis describes the relative amount of soil erosion that could be expected under each alternative. Estimated amounts of sediment production for each action alternative were generated using the revised soil loss equation. This equation uses six factors including climatic erosivity, soil erodibility, slope length, slope steepness, cover management, and support practices to compute soil loss.

Estimates assume full implementation of each alternative and represent a worst case situation because: 1) the existing road and trail mileage used for analysis was the high end of the estimated range present within the ISRMA; 2) foreseeable road and trail construction used erosion hazard rating classes that may be higher than what the actual ground conditions represent; and 3) the erosion hazard ratings of existing roads may be higher than actual ground conditions represent.

Spending and Economic Impact: Alternatives could have subtle differences regarding the level of economic benefit the community might capture due to recreation uses within the ISRMA. This analysis provides a quantitative assessment regarding the gross economic impact to the community under each alternative. For analysis purposes, spending and economic impact related to recreation resources was calculated using the estimated annual visitation, average spending of \$12.00 per visitor day, and a community multiplier of 2.6.

Private Property: Although private property is excluded from land-use allocations made within this activity plan, decisions made by BLM on adjacent public land may have off-site impacts to private property. This analysis discloses what some of the impacts might be.

Special Status Species: Some alternatives could place certain habitats of special status plants and animals at risk even though they may be protected by state or Federal regulation. This analysis describes what risk each alternative may have upon special status species.

Whiskeytown Deer Herd: Alternatives may impact the population of the Whiskeytown deer herd by altering hunter access and by modifying deer winter range habitat. This analysis provides a qualitative discussion of what might happen to the Whiskeytown deer

herd.

Topics Considered But Dropped From Intensive Analysis

Some topics that people were concerned with could not be analyzed due to incomplete information, or were not impacted by land-use allocations made within the activity plan. These topics, and the rationales for excluding them from analysis, include:

Visitor Safety: Visitor safety is an agency and user concern. Recreating in the outdoors has inherent risks, and those risks vary depending upon the activities engaged in, and the setting those activities occur in. Insurance companies use statistics to predict the risk that certain activities may have for injury and death. Although interesting, BLM chose not to reiterate insurance data within this plan for specific activities occurring within certain areas and include it as an impact topic.

The ISRMA plan attempts to provide recreation opportunities in normally acceptable aggregations or separations. These separations improve the quality of the recreational experience and often improve the safety of the visitor. Although incompatible users likely would encounter each other in the ISRMA, the rate of occurrence should be tolerable.

The ISRMA plan calls for the distribution of literature that would warn public land users that some water bodies are contaminated by acid mine drainage. The percentage of public land users that would get this information and use it to their advantage is unknown. Other ISRMA plan provisions would prohibit swimming and boating in the Spring Creek arm of Keswick Reservoir and elsewhere. This may also improve visitor safety. Readers should note, however, that Federal land managers can not identify and alleviate every risk in the outdoors.

Although visitor safety will not be an impact topic addressed within this plan, this subject is a strong consideration in the development of recreation facilities (including trails), and the conduct of land management operations (such as prescribed burning). This topic is more appropriately a consideration of those site specific plans.

Garbage Dumping: Garbage dumping is a major concern to public managers and private landowners within the ISRMA. Easy motor vehicle access, limited management presence, infrequent visitor use, high landfill fees, and a nearness to urban areas are factors contributing to the garbage dumping problem within the ISRMA and elsewhere. Although several alternatives may influence where garbage dumping would likely occur, garbage dumping would likely continue under all alternatives at a similar rate.

The rate and location of garbage dumping is not a topic intensively analyzed within this document because many factors outside the scope of this planning effort are involved. Although some alternatives would likely stop dumping in certain areas, dumpers would likely find alternative illegal sites. These sites may or may not be on public lands, and

may or may not be within the ISRMA.

Water Quality: Soil movement and sedimentation is analyzed as an impact topic, but other parameters used to describe water quality are not. Little information (other than acid mine drainage) is available to adequately describe impacts to other parameters related to water quality.

Vegetation: Although the ISRMA plan recommends desired plant communities for the area, vegetation is not considered an impact topic by itself. Dramatic vegetation type conversions are not expected or anticipated. The only noteworthy change to vegetation within the ISRMA would be the goal of converting the brush community to mimic natural fire regimes. Impacts to special status plants are analyzed separately and ground cover is considered within the soil erosion analysis.

Wild and Scenic Rivers: The ISRMA does not encompass any rivers that are components of the National Wild and Scenic Rivers Act. BLM analyzed the Clear Creek segment above Whiskeytown Lake within the 1992 Resource Management Plan and found it to be ineligible.

Wilderness/Wilderness Study Areas: The ISRMA does not encompass lands within the National Wilderness Preservation System (System), or any Wilderness Study Areas currently under consideration for inclusion within the System.

Wetlands/Riparian: Standards and guidelines adopted by BLM and the Forest Service within the Northwest Forest Plan protect wetlands and riparian areas. Readers interested in these standards and guidelines are encouraged to read this plan which is available for review at BLM's Redding office. Riparian reserves identified on the Riparian Reserves Map ensure the continued protection and consideration of these fragile ecosystems.

Prime and Unique Farm Lands: No prime and unique farm lands are known to exist within the ISRMA.

Flood Plains: Because the plan is not expected to cause measurable changes to water yields, flood plains should not be modified. Riparian reserves (see wetlands/riparian) are expected to protect existing flood plains from unacceptable disturbance.

Areas of Critical Environmental Concern: The ISRMA does not contain any lands that have been identified as Areas of Critical Environmental Concern as defined within the Federal Land Policy and Management Act.

Cave Resources: The ISRMA does not contain any caves, or cave resources, that would be impacted by decisions made within this plan.

Foreseeable Development

In order to estimate the expected impacts of each alternative, foreseeable development scenarios were generated for each action alternative. These scenarios are not land-use decisions, but serve as informed assumptions to facilitate with impact assessments. The scenarios describe developments and circumstances common to all alternatives, and developments and circumstances unique to each alternative.

Foreseeable Development Common To All Alternatives: Under all alternatives, the Chappie-Shasta OHV Management Area would likely host approximately 10-15 organized motor vehicle events each year with 50 to 350 participants per event. Furthermore, the Sacramento River Greenway, Chappie-Shasta OHV Management Area, and/or Clear Creek Greenway would likely host approximately 3-6 organized mountain bike, equestrian, hang glider and/or paraglider events each year with 25 to 400 participants per event. Finally, public lands within the ISRMA would likely host 1 to 5 specialized events each year (such as paint ball war games and orienteering) with 25 to 200 participants per event.

A cooperative management arrangement with a private organization would likely be secured for management of the Flat Creek Gold Recovery Demonstration Area and use authorizations would likely be developed or retained for management of hang glider/paraglider launching facilities above Spread eagle Mine and South Fork Lookout.

Manipulation of vegetation within the ISRMA to achieve desired plant communities would likely be accomplished through prescribed burning, mechanical clearing, timber harvesting, fire suppression practices and vegetative plantings. Under all land-use alternatives, Table 4.1 depicts foreseeable vegetation management:

Table 4.1 Foreseeable Vegetation Management Under All Alternatives		
Vegetation Management Treatment or Activity	Units	Range/Year
Harvest of commercial forest products (including fuelwood)	Cubic Feet	180,000 to 360,000
Prescribed burning of vegetation to achieve DPC's	Acres	100 to 400
Mechanical clearing of vegetation to achieve DPC's	Acres	50 to 200
Unplanned burning (estimate for analysis purposes only) ₁	Acres	100 to 400
Mechanical clearing of vegetation for private residential development	Acres	50 to 100
Tree planting in denuded or understocked areas	Acres	50 to 100
Footnote: 1. Unplanned burning includes natural wildfire caused from lightening strikes and human or equipment caused fires.		

Foreseeable Development, Alternative A: Under this alternative, Table 4.2 depicts foreseeable recreation development if key private land is acquired:

Table 4.2 Foreseeable Development, Alternative A		
Facility Development or Availability	Unit	Range
Existing trails or roads managed and available for all registered motor vehicles	miles	220
Existing trails or roads managed and available for non-motor vehicle use only	miles	45
Existing trails or roads obliterated or unused for soil protection and wildlife	miles	10
New roads or trails constructed, managed and available for all registered motor vehicles	miles	14
New roads or trails constructed, managed and available for non-motor vehicle use only	miles	1
Existing roads available to drivers with vehicles registered for highway use only	miles	30
Large parking areas to be constructed (1/4 acre to 1 acre)	each	2 to 4
Small parking areas or pullouts to be constructed (1/10 to 1/4 acre)	each	5 to 10
Regional firing range facility development and management (40 acres to 60 acres)	each	1

Foreseeable Development, Alternative B: Under this alternative, Table 4.3 depicts foreseeable recreation development if key private land is acquired:

Table 4.3 Foreseeable Development, Alternative B		
Facility Development or Availability	Unit	Range
Existing trails or roads managed and available for all registered motor vehicles	miles	215
Existing trails or roads managed and available for non-motor vehicle use only	miles	50
Existing trails or roads obliterated or unused for soil protection and wildlife	miles	10
New roads or trails constructed, managed and available for all registered motor vehicles	miles	13
New roads or trails constructed, managed and available for non-motor vehicle use only	miles	1
Existing roads available to drivers with vehicles registered for highway use only	miles	30
Large parking areas to be constructed (1/4 acre to 1 acre)	each	4 to 6
Small parking areas or pullouts to be constructed (1/10 to 1/4 acre)	each	5 to 10
Regional firing range facility development and management (40 acres to 60 acres)	each	1

Foreseeable Development, Alternative C: Under this alternative, Table 4.4 depicts foreseeable recreation development if key private land is acquired:

Table 4.4 Foreseeable Development, Alternative C		
Facility Development or Availability	Unit	Range
Existing trails or roads managed and available for all registered motor vehicles	miles	200
Existing trails or roads managed and available for non-motor vehicle use only	miles	60
Existing trails or roads obliterated or unused for soil protection or wildlife	miles	10
New roads or trails constructed, managed and available for all registered motor vehicles	miles	2
New roads or trails constructed, managed and available for non-motor vehicle use only	miles	1
Existing roads available to drivers with vehicles registered for highway use only	miles	35
Large parking areas to be constructed (1/4 acre to 1 acre)	each	4 to 6
Small parking areas or pullouts to be constructed (1/10 to 1/4 acre)	each	5 to 10
Regional firing range facility development and management (40 acres to 60 acres)	each	0

Foreseeable Development, Alternative D: Under this alternative, Table 4.5 depicts foreseeable recreation development if key private land is acquired:

Table 4.5 Foreseeable Development, Alternative D		
Facility Development or Availability	Unit	Range
Existing trails or roads managed and available for all registered motor vehicles	miles	210
Existing trails or roads managed and available for non-motor vehicle use only	miles	50
Existing trails or roads obliterated or unused for soil protection or wildlife	miles	10
New roads or trails constructed, managed and available for all registered motor vehicles	miles	14
New roads or trails constructed, managed and available for non-motor vehicle use only	miles	1
Existing roads available to drivers with vehicles registered for highway use only	miles	35
Large parking areas to be constructed (1/4 acre to 1 acre)	each	5 to 7
Small parking areas or pullouts to be constructed (1/10 to 1/4 acre)	each	5 to 10
Regional firing range facility development and management (40 acres to 60 acres)	each	1

Impacts Common to All Alternatives

This section discloses what impacts would be expected regardless of the alternative selected and implemented.

Recreation Opportunities

The ISRMA is a land-base that provides opportunity for a dynamic demand pool of potential recreationists. This demand pool fluctuates due to factors such as local populations, overnight accommodations for travelers, leisure time, marketing efforts, and gasoline prices. Under all alternatives, slight increases would be expected for sight-seeing and auto touring recreation, and jetskiing and waterskiing recreation within the ISRMA. Alternatives disclosed within the plan would have little impact on opportunities for those forms of recreation within the ISRMA and use levels would be expected between 200,000 to 250,000 annual visits for sight-seeing and 18,000 to 19,000 for waterskiing and jetskiing.

Noise Levels

Noise levels associated with motor vehicle travel within the critical deer winter range are not expected to be detrimental to the wintering deer herd if motor vehicle traffic remains below the established thresholds. Above thresholds, noise generated from motor vehicles may stress deer populations which could result in a decline of the herd. Noise levels near bald eagle activity centers on Forest Service land are currently acceptable and are not expected to violate standards established within the Forest Service's bald eagle management plan under all alternatives.

Noise generated by motorized watercrafts on Keswick Reservoir and Whiskeytown Lake are unaffected by actions described within this plan. Noise associated with those activities would likely annoy some people recreating nearby. Overall, motorized watercrafts are not expected to generate noise that would violate standards established for residentially zoned land where this land is adjacent to those water bodies.

Managing and encouraging responsible off-highway motor vehicle recreation within the Chappie-Shasta OHV Management Area has both positive and negative influences on noise. By managing motor vehicle use within the Chappie-Shasta OHV Management Area, land managers can ensure that vehicles are properly fitted with mufflers that can reduce noise levels by as much as 10 dBA's per motor vehicle. Because about 15% of all motorcycles and ATV's within this region are not properly equipped with mufflers, the noise reduction can be substantial. On the other hand, signing trails, providing maps, and encouraging use will lead to increased motor vehicle use in Chappie-Shasta OHV Management Area that can increase noise levels near some roads and trails.

Motor Vehicle Traffic

Motor vehicle traffic on most roads is expected to be relatively low within the critical deer

winter range between November 15 to April 15. Notable exceptions would be East Fork Road and Cline Gulch Road which are County maintained and provide access to private residences. Cline Gulch Road would have perhaps the greatest motor vehicle traffic during this period due to the school that is accessed from the road.

Off-highway motor vehicle traffic within the ISRMA is restricted to managed roads and trails. Although most recreation visitors would stay on designated roads and trails, some motor vehicle travel could be expected off roads, especially where terrain is flat. In order to reduce erosion and other resource damage, BLM would attempt to minimize this type of motor vehicle use.

Air Pollution

Air pollution caused from prescribed burning and wildfire would likely cause short periods of low to moderate levels of particulate matter (PM₁₀). Some of this pollution would be expected to drift over Redding even though burn events would be carefully planned to minimize this occurrence. Under all alternatives, the estimated amount of prescribed burning would be between 100 acres to 400 acres per year. This level of burning, added to potential events of wildfire, is not expected to contribute significant sources of particulate matter that would violate Federal or state standards.

Socio-Cultural Resources

Direct damage or destruction of cultural resources from land-based actions that are authorized are expected to be low since avoidance of resources is preferred, or in a few cases, data recovery or detailed documentation will help lessen the impact. However, indirect impacts to archaeological and historical sites is likely under all alternatives and is proportionate to the number of visitors participating (directly or indirectly) in an action, the acres involved, the type of activity, the duration of the activity, and its overall extent. Increased visitor use in the ISRMA can result in unauthorized collecting of prehistoric or historic artifacts and features, intentional and unintentional damage to historic structures and features, and secondary impacts to inhabited historic places such as French Gulch and the Gladstone Mine if traffic increases causing noise and congestion.

Because a large amount of the area is remote, rugged and often covered with dense chaparral vegetation, visitation to many of the cultural resources is likely to be low or non-existent. The greatest danger to cultural resources will come from increasing access to certain sites with new trail or road building, or purchase of easements over existing private roads that were once infrequently used. Furthermore, increased visitation can increase the likelihood of illegal looting, vandalism and collecting of artifacts and features at sites, and illegal fires causing structure loss and heat damage to artifacts and features. Illegal uses such as trash dumping and vehicular use off established roads can cause visual intrusions to sites.

Private Property

Private landowners and public land managers within the ISRMA are very concerned with illegal trespass. While the goal of the recreation manager is to provide an opportunity for people to recreate, certain areas and regions are established as off limits to certain types of uses. Keeping visitors and associated uses off private property may also be a goal of some private landowners within the ISRMA. Overall, the ability of public and private landowners to keep certain types of uses and users off any land within the ISRMA is dependent upon the ability of landowners to cooperate. Because of this, the better all landowners coordinate within the ISRMA, the better certain types of illegal uses can be prevented.

Signing and constructing new legitimate trails within the ISRMA may reduce usage on current trespass routes and help direct people away from sensitive resources. It is also true that new roads and trails near private property may improve access onto private land where visitors may not be desired. In remote regions, roads and trails open to motor vehicle use may result in more trespass and other criminal activities than roads and trails that are available for non-motorized users only. Without adequate law enforcement presence, motor vehicles can provide the means to rapidly enter and leave an area where the criminality occurs.

Managing motor vehicle use and access points within the ISRMA is a great challenge within the ISRMA. Simply closing all roads and trails in certain areas to motor vehicle travel is not an option because these roads provide access to private property surrounded by public lands. It is safe to say, that all alternatives that attempt to manage off-highway motor vehicle use are better than doing nothing in regards to trespass and other illegal activities.

None of the alternatives are likely to increase the liability of private landowners, unless the landowners are guilty of "willful or malicious misconduct" as defined by California law. The recreational trespasser on private land assumes the risk of injury, absent willful or malicious misconduct by the landowner (Hannon v. U.S. (E.D. Cal. 1992) 801 F. Supp. 323, 327). While this may be the case, some landowners may be exposed to more or less lawsuits as a result from an increase, decrease, or change in type, of recreational usage by the public on or near the landowners property. The same argument can be made of private property anywhere.

Special Status Plant Species

The Canyon Creek Stonecrop is the only special status plant species known to occur within the ISRMA and can be found growing at two locations situated on north and northwest facing rock-outcrops along steeply sloped ridge lines. These two occurrences, totalling close to 200 individuals, presently show no signs of disturbance from human activity. The encouragement of recreation activities under all alternatives within the plan could increase the potential of disturbance, but because this plant thrives in steep and

rugged habitat, it is suspected that the known populations (or any undiscovered populations) would be impacted little.

There are four special status plant species that are currently not found within the ISRMA, but may have the potential to occur. If these plants were discovered, it is anticipated that provisions within this plan would be adequate so that none of the proposed alternatives would significantly impact these species. Two of these species, silky cryptantha and Howell's alkali-grass, have habitats which are associated with riparian zones. Riparian reserve management guidelines are expected to protect these two special status species. The other two species, thread-leaved beardtongue and the Shasta snow-wreath, would be protected by Federal regulations and existing policies. Finally, management guidance common to all alternatives should adequately protect additional special status plants that may be discovered within the ISRMA.

Shasta County arnica, a special interest plant with a limited distribution, is found in sufficient numbers and distributed widely enough within its range that the potential for extinction is low at this time. Acquisition of private land from willing sellers may help control residential development and use, thus reducing threats of disturbance and destruction to this plant species. Impacts to this species, or other unique natural plant communities, would be evaluated on a case by case basis.

Special Status Wildlife Species

The ISRMA is known to contain six special status wildlife species including the osprey, bald eagle, Pacific fisher, Shasta Salamander, Foothill yellow-legged frog and winter run Chinook salmon. It is difficult (at this programmatic level of planning) to predict what, if any, impact would occur to these species. Site specific impact analysis would be conducted prior to implementing any element described within this plan.

Management guidelines for riparian reserves described within this plan and adopted by BLM and the Forest Service within the Northwest Forest Plan, should protect all habitat requirements for the Shasta salamander and Foothill yellow-legged frog. Riparian protection would also improve prey species for the osprey, bald eagle, and Pacific fisher. Finally, riparian management would indirectly benefit the winter run Chinook salmon by reducing sediment loads into the Sacramento River below Keswick Dam.

Within the Iron Mountain Area management unit, public lands may be disposed of to facilitate acid mine treatment from the Iron Mountain Mine. Although treatment options are described within other planning efforts, it is expected that actions taken to reduce the acid mine discharge would have significant benefits to this threatened run of salmon. No other actions described within this plan would cause measurable impacts to the winter run Chinook salmon.

Motor vehicle travel on roads and trails within the Chappie-Shasta OHV Management

Area may cause minor disturbances to the Pacific fisher and Bald eagle, but noise levels have not been great enough to justify closures at this time. BLM and Forest Service will continue to monitor these two species and may impose motor vehicle restrictions during their breeding seasons if noise levels become disruptive.

Northern spotted owls have not been located within the ISRMA, but are present within Late Successional Reserves located two miles from the northern boundary (Bear Creek watershed) and five miles from the western boundary (Clear Creek). Riparian reserve management and late successional, mixed-conifer forest desired plant communities specified for the ISRMA may help with dispersal, but large blocks of habitat are not attainable.

Soil Resources

Soil resources within portions of the ISRMA have been damaged extensively from historical uses related to mineral exploration, extraction and refinement. As discussed within the Affected Environment section, toxic emissions generated from copper smelters during the late 1800's and early 1900's destroyed virtually all vegetation within the Keswick watershed and portions of the Clear Creek watershed. Without vegetation to protect the fragile soil resources, most areas within the ISRMA experienced massive soil erosion. In some places, all of the top soil has eroded away leaving only exposed bed rock; in other places, only a thin veneer of top soil remains.

Under all alternatives, timber harvest, mining, prescribed burning, residential clearing, and wildfire would cause some soil loss within the ISRMA. Soil loss associated with timber harvest is not expected to be significant because of the relatively small amount of productive forest land. Soil loss associated with future mining is not expected to be great because extensive road networks are in place that provide access to mineral deposits. Soil loss associated with prescribed burning would be minimal because burns would normally not be conducted on soils with high erosion hazard ratings and only small blocks would be burned. Finally, soil loss from residential clearing would be minimal because little developable land is present.

The possibility of a large wildfire is, perhaps, the biggest threat to soil resources within the ISRMA. Although wildfire is a naturally occurring phenomenon, especially in chaparral dominated plant communities, heavy fuel loadings within the ISRMA could cause a high intensity burn that may damage or destroy soil micro-organisms, reduce soil permeability and fertility, and accelerate erosion.

All alternatives are expected to have some beneficial indirect impacts to soil resources located in areas outside the ISRMA because some off-highway vehicle use could be directed away from those areas and into the Chappie-Shasta OHV Management Area. Notable regions containing highly erosive, decomposed granitic soils, such as the Grass Valley Creek watershed and portions of the Willow Creek watershed, would likely benefit

from having available riding/driving areas nearby. This is particularly true in the case of the Grass Valley Creek watershed where the sensitive soils were being further damaged by off-highway vehicle use prompting a Trinity County ordinance prohibiting such use.

Although impacts to soil resources from road and trail management and construction are discussed individually by each alternative, some generic impacts are common to all alternatives. The ISRMA contains about 300 miles of existing roads and trails that were developed by miners, loggers, private landowners, and public agencies. Most roads within the ISRMA cross different landowners and segments of the same road are often maintained differently depending upon the capability of the landowner where the road resides. In general, unmaintained road segments located on private parcels that are owned by absentee landowners are experiencing moderate to heavy soil loss. Many of these road segments do not contain properly maintained drainage features and erode heavily during the winter season. Off-highway motor vehicle use over these segments further damage the roads contributing to even more erosion.

Infrequently maintained road or trail segments located on private and public land also experience soil loss, but the rate of soil loss is less than what occurs on the unmaintained roads. Many of these roads or trails may have erosion control work performed once every 10 years, depending upon the financial capabilities of the landowners. Off-highway motor vehicle recreation on these roads or trails is often very popular because the lower maintenance standard can provide challenging driving opportunities.

Finally, frequently maintained road or trail segments located on private and public land normally experience less soil loss than any other type of road or trail segment. Proper drainage design and winterizing alleviates heavy soil loss from these roads or trails. These roads or trails can also provide challenging driving opportunities for off-highway motor vehicle recreationists.

Whiskeytown Deer Herd

Desired plant communities formulated for the ISRMA attempt to improve habitat conditions for the Whiskeytown Deer Herd within the winter range. If the desired plant communities were fully achieved for the winter range, old-growth stands of mixed chaparral would be manipulated to produce multiple age brush species featuring a species composition that would be more nutritional for deer. Winter range is currently dominated by dense stands of mature chamise and manzanita that provide little nutritious value for wintering deer.

This section discloses what impacts would be expected (or already are occurring) due to full implementation of the No Action Alternative.

Recreation Opportunities

OHV opportunities would likely improve within the Chappie-Shasta OHV Management Area as important land or road easements were acquired from willing sellers. Development of loop trails and roads would likely enhance OHV opportunities, and signing would likely compliment the network of approximately 200 to 250 miles of road and trail. Prohibiting motor vehicles on about 70 miles of road and trail due to closures within the critical deer winter range between October 15 to April 1 each year would cause notable losses of OHV recreation opportunities. Overall, the Chappie-Shasta OHV Management Area could accommodate between 43,000 to 55,000 annual OHV recreation visits.

Hiking and running opportunities may slightly improve in the Keswick Area with the development of a campground at Motion and the closure of the railroad bed below this campground to motor vehicle use. Hiking and running opportunities on the Sacramento River Trail below Keswick Dam would likely improve as additional trails were developed and the bridge to Turtle Bay was completed. Overall, hiking and running use would be expected between 106,000 to 150,000 annual visits.

Mountain bike riding opportunities would likely improve within the Chappie-Shasta OHV Management Area as important land or road easements were acquired from willing sellers. Mountain bike riders would also benefit from the development of loop trails and signing of the road and trail network. Mountain and road bike riding opportunities would likely improve on the Sacramento River Trail as additional trails were developed and the bridge spanning across the Sacramento River to Turtle Bay was completed. Overall, mountain and road bike riding use would be expected between 97,000 to 140,000 annual visits.

Fishing opportunities would likely improve in the Keswick Area with the development of a campground and launching ramp at Motion Siding. Boat access campgrounds on the east side of Keswick Reservoir would also improve fishing opportunities. Overall, fishing use would be expected between 27,500 to 32,500 annual visits.

Hunting opportunities may slightly decline within the Keswick Area as campgrounds were developed and shooting prohibited adjacent to developed sites. Hunting opportunities may slightly improve within the Chappie-Shasta OHV Management Area with improved transportation systems. Overall, hunting use would likely remain around 1,500 annual visits.

Equestrian opportunities may slightly improve in the Keswick Area where motor vehicles were excluded. Overall, equestrian use would likely remain around 1,500 annual visits.

Hang gliding and paragliding opportunities would likely improve within the Chappie-Shasta OHV Management Area as important private lands or easements were acquired from willing sellers. Improved motor vehicle access to the Spreadeagle launching site and the South Fork Lookout launching site would benefit flyers. Overall, hang gliding and paragliding use would be expected between 200 to 500 annual visits.

Target shooting opportunities would likely decline within the Keswick Area as campgrounds were developed near Motion Siding and the east shore of the reservoir, and target shooting was prohibited near those facilities. Overall, target shooting use would be between 500 to 1,000 annual visits.

Spending and Economic Impact

Full implementation of this alternative could generate 5.9 to 7.8 million dollars of annual visitor spending, with a resulting 15.3 to 20.3 million dollars of annual community spending associated with recreation in the ISRMA.

Motor Vehicle Traffic

Table 4.6 shows the estimated change in motor vehicle traffic over select roads with full implementation of this alternative.

Table 4.6 Expected Change in Traffic Loads, No Action Alternative		
Federal/State/County Roadway	County Road Number	Change in Average Daily Motor Vehicle Traffic
Cline Gulch Road	5E006	plus 6 to 18
Coram Road above staging area	5G011	plus 12 to 30
Coram Road below staging area	5G011	plus 7 to 19
East Fork Road	6E002	plus 11 to 32
Highway 151 between Lake Boulevard and Shasta Dam	FAU5131	plus 12 to 30
Iron Mountain Road between North Street and Keswick Lake Ramp	4G01	plus 4 to 8
Iron Mountain Road between Keswick Lake Ramp and Matheson Road	4G01	plus 4 to 8
Keswick Lake Ramp Road	4G160	plus 4 to 8
Matheson Road	4G150	plus 4 to 8
Trinity Mountain Road	5E01	plus 17 to 50
Walker Mine Road	4G10	none

Noise Levels

Noise levels are evaluated with respect to the amounts of motor-vehicle traffic and target shooting that key areas may receive. Full implementation of this alternative would likely retain or slightly reduce noise levels near Keswick Reservoir, and retain or slightly

increase noise levels near French Gulch and the East Fork of Clear Creek. In most regions within or near the ISRMA, noise levels would not be expected to register noticeable changes.

Near Keswick Reservoir, the development of three campgrounds and prohibition of target shooting adjacent to them would likely reduce some peak occurrences of noise. Motor vehicle related events starting from the current staging facility near Shasta Dam currently causes short occurrences of moderate to high noise, especially during the start of an event. These events and the corresponding noise are infrequent, occurring about 6 weekends per year.

Long-term noise measures would not likely change significantly near Keswick Reservoir. Several popular shooting sites located adjacent to the Reservoir would no longer be used and target shooting may be reduced by up to 50 percent. Residentially zoned land located in the community of Keswick and near Eastshore Road would most likely retain L_{dn} noise levels less than 55 dBA. Motor vehicle traffic on the lower portion of Coram Road and power boat noise on Keswick Reservoir from a boat ramp near Motion Siding may increase noise levels on residentially zoned property northwest of Motion Siding. Although this land has not been developed for residential uses, the land would likely retain L_{dn} noise levels less than 55 dBA.

Noise levels within French Gulch and along East Fork Road may slightly increase as motor vehicle related traffic increased. Motor vehicle traffic on Trinity Mountain Road would increase by approximately 17 to 50 vehicles per day, and on East Fork Road by approximately 11 to 32 vehicles per day. Although motor vehicle occurrence is common on Trinity Mountain Road, traffic on East Fork Road is normally low. Although noise related to motor vehicle traffic would slightly increase in both places, noise levels adjacent to these roads would not be expected to exceed a L_{dn} of 55 dBA.

Air Pollution

Estimated levels of air pollution are shown in Table 4.7.

Table 4.7 Air Pollution Generation, No Action Alternative		
Form of Air Pollution	Estimated Grams/Day	Estimated Pounds/Year
Carbon Monoxide (CO)	25,200 to 32,300	20,500 to 26,300
Oxides of Nitrogen (NO _x)	4,500 to 5,800	3,700 to 4,800
Particulate Matter smaller than 10 microns in size (PM ₁₀)	540 to 680	440 to 550
Oxides of Sulfur (SO _x)	380 to 490	310 to 400

Socio-Cultural Resources

Under this alternative, if vehicle traffic increased by 17 to 50 vehicles per day on Trinity

Mountain Road near the community of French Gulch, then there would be a moderate visual and auditory intrusion within this historic community. Similarly, if vehicle traffic increased by 6 to 8 vehicles per a day on Cline Gulch Road one mile west of the Gladstone Mine Complex, then there would be a slight visual and auditory intrusion on the road providing access to this historic feature. It is difficult to predict whether increased recreation visitors within other parts of the ISRMA would have an effect on other scattered historic mining locales in the mountains.

It is apparent that prehistoric and historic sites in the region have been undergoing an unspecified level of illegal collecting and looting for a number of years. There is no doubt that historic locations generally are deteriorating over time, unless protective measures are undertaken as at French Gulch, the Gladstone Mine buildings, Towerhouse, and a few other locations. More recent mining, even later historic mining, often has destroyed earlier cultural remains. A number of existing roads have already damaged or destroyed prehistoric camps. In some locations, urban sprawl has resulted in losses of cultural resources on private lands and, occasionally, adjoining public lands. Historic hydroelectric developments have damaged or destroyed earlier historic and prehistoric locations as have water impoundments such as Keswick, Whiskeytown and Shasta reservoirs, and railroads.

Overall, full implementation of this alternative would probably result in the loss or damage to less than 10 sites per year. Impacts would be expected mostly on mining locations and small prehistoric deposits, and would be caused from current and future mining, road development, looting, prescribed burning and wildfire.

Private Property

Existing planning that constitutes the No Action Alternative leaves extensive discretion to land managers and some actions specified could only be implemented if private land was acquired from willing sellers; for these reasons, assessing impacts to private property is difficult. It is reasonable to assume that if motor vehicle traffic increased by 17 to 50 vehicles per day over Trinity Mountain Road through the community of French Gulch, then the peaceful setting that this community emphasizes would be degraded. Furthermore, if traffic increased on East Fork Road by 11 to 32 vehicles per day, then private residences living off the road could experience undesirable traffic levels.

Full implementation of this alternative would provide a boat launching facility near Motion Siding which could provide some disturbance to a private residence living in this area. Although this residence would likely receive improved access to the property under this alternative, sharing that access with other public land users may be undesirable.

Soil Resources

Impacts to soil resources are not described under this alternative because little information is available regarding the extent of road and trail development under existing

plans that constitute the No Action Alternative. For this reason, impacts described would be too speculative and would not provide a meaningful baseline to compare other alternatives to.

Whiskeytown Deer Herd

Impacts to the Whiskeytown deer herd are difficult to assess under this alternative, or any other, because little direction is given regarding trail and road construction. Mitigation measures provided by the Shasta OHV Management Plan (BLM and Forest Service, 1984) would prohibit the construction of any new road or trail within the winter range of this deer herd without reconstructing an equal amount of habitat. Reconstruction of habitat could be accomplished by burning or clearing mature chaparral stands of brush. For this reason, it is reasonable to assume that full implementation of this alternative would not change the amount of habitat within the 27,488 acres of winter range within the ISRMA.

Mitigation measures prescribed by the Shasta OHV Management Plan would also prohibit motor vehicle travel over the approximately 53 miles of road and trail within the winter range between October 15 to April 1 each year. Although it was once believed that these measures were required to reduce stress that would be detrimental to the Whiskeytown deer herd, recent studies indicate that complete vehicle prohibitions may not be warranted at this time (California Department of Fish and Game, 1991 and San Jose State University, 1989). Overall, impacts to the Whiskeytown deer herd would be relatively insignificant.

This section discloses what impacts would be expected due to full implementation of Alternative A.

Recreation Opportunities

OHV opportunities would likely improve within the Chappie-Shasta OHV Management Area as important land or road easements were acquired from willing sellers. Development of loop trails and roads would likely enhance OHV opportunities, and signing would likely compliment the existing network of approximately 220 miles of available road and trail. Development of OHV access points near Whiskey Creek, the Merry Mountain Site and/or New York Gulch, and at the Keswick Boat Ramp would greatly improve accessibility into the area. Development of two additional south to north corridors would ease motor vehicle travel to a network of roads and trails located north and south of Big Gulch. Overall, the Chappie-Shasta OHV Management Area could accommodate between 66,500 to 78,500 annual OHV recreation visits.

Hiking and running opportunities would moderately decline with increased OHV use on the railroad grade between the Keswick Boat Ramp and Shasta Dam. Extending the Sacramento River Trail northward to Keswick Boat Ramp would improve hiking and running opportunities, but the potential of those users on a shared motor vehicle trail above the boat ramp is questionable. Development of non-motorized trails on the east side of Keswick Reservoir would improve hiking and running opportunities as would development of trails within the Clear Creek Greenway. Hiking and running opportunities on the Sacramento River Trail below Keswick Dam would also improve as additional trails were developed and the bridge to Turtle Bay was completed. Overall, hiking and running use would be expected between 125,000 to 169,000 annual visits.

Mountain bike riding opportunities would greatly improve within the Sacramento River Greenway and Chappie-Shasta OHV Management Area as the Sacramento River Trail was extended north to Keswick Boat Ramp. Mountain bike riders would also benefit from the development of loop trails on the eastern side of Keswick Reservoir. Mountain and road bike riding opportunities would likely improve on the Sacramento River Trail below Keswick Dam as additional trails were developed and the bridge spanning across the Sacramento River to Turtle Bay was completed. Overall, mountain and road bike riding use would be expected between 127,000 to 170,000 annual visits.

Fishing opportunities would greatly improve within the Chappie-Shasta OHV Management Area with improved motor vehicle access to the western portion of Keswick Reservoir and a site attendant at the Keswick Boat Ramp/OHV Staging Area. Fishing opportunities would likely improve with the development of a multiple use day-use area near Clear Creek. Overall, fishing use would be expected between 27,500 to 29,500 annual visits.

Hunting opportunities may slightly improve within the Chappie-Shasta OHV Management Area with improved transportation systems. Overall, hunting use would likely remain around 1,500 annual visits.

Equestrian opportunities would moderately improve in the Sacramento River Greenway with the extension of the Sacramento River Trail to the Keswick Boat Ramp/OHV Staging Area, but the potential of placing those users on a shared motor vehicle trail above the boat ramp is questionable. Development of non-motorized trails within the Clear Creek Greenway would improve equestrian opportunities. Overall, equestrian use would be expected between 1,000 to 2,000 annual visits.

Hang gliding and paragliding opportunities would likely improve within the Chappie-Shasta OHV Management Area as important private lands or easements were acquired from willing sellers. Improved motor vehicle access to the Spreadeagle launching site and the South Fork Lookout launching site would benefit flyers. Overall, hang gliding and paragliding use would be expected between 200 to 500 annual visits.

Target shooting opportunities would greatly improve with the development of a regional firing range north of Keswick Boat Ramp adjacent to Iron Mountain Road. A regional facility could be expected to accommodate between 5,000 and 10,000 annual visits.

Spending and Economic Impact

Full implementation of this alternative could generate 6.9 to 8.8 million dollars of annual visitor spending, with a resulting 17.9 to 22.9 million dollars of annual community spending associated with recreation in the ISRMA.

Motor Vehicle Traffic

Table 4.8 shows the estimated change in motor vehicle traffic over select roads with full implementation of this alternative.

Table 4.8
Expected Change in Traffic Loads, Alternative A

Federal/State/County Roadway	County Road Number	Change in Average Daily Motor Vehicle Traffic
Cline Gulch Road	5E006	plus 3
Coram Road above staging area	5G011	plus 13
Coram Road below staging area	5G011	plus 24
East Fork Road	6E002	plus 8
Highway 151 between Lake Boulevard and Shasta Dam	FAU5131	plus 13
Iron Mountain Road between North Street and Keswick Lake Ramp	4G01	plus 15
Iron Mountain Road between Keswick Lake Ramp and Matheson Road	4G01	plus 6
Keswick Lake Ramp Road	4G160	plus 15
Matheson Road	4G150	none (closed)
Trinity Mountain Road	5E01	plus 10
Walker Mine Road	4G10	plus 4

Noise Levels

Noise levels are evaluated with respect to the amounts of motor-vehicle traffic and target shooting that key areas may receive. Full implementation of this alternative would slightly increase noise levels near Keswick Reservoir and retain noise levels in French Gulch and the East Fork of Clear Creek. In most regions within or near the ISRMA, noise levels would not be expected to register noticeable changes.

Preliminary noise tests were conducted April of 1991 at the potential regional firing site located north of Keswick Boat Ramp. The six key areas evaluated were stations located: 1) 2 miles south of the range (off Quartz Hill Road); 2) 2 miles from the range at west end of Mac's Road (off Lake Boulevard; 3) 1.5 miles from the range on Walker Ridge (off Walker Mine Road); 4) 0.75 miles from the range on the abandoned railroad bed; 5) 3 miles from the range in town of Keswick; 6) 0.75 miles from the range near a private residence on Walker Mine Road.

Test results for the stations described above are: 1) shotgun noise was barely detectable, but pistol and rifle noise could be heard; 2) pistol and shotgun noise could not be heard, but rifle noise could barely be heard; 3) pistol and shotgun noise could not be heard, but rifle noise was detectable; 4) all shooting was clearly heard; 5) pistol shooting could not be heard, but 10 to 50 percent of rifle shooting could be heard; 6) pistol and shotgun noise could be heard, and rifle noise was fairly loud.

Noise tests indicate that noise levels would not likely exceed a L_{dn} of 55 dBA in residential areas near Keswick Reservoir, and pistol and shotgun noise would probably not be objectionable to most residents living near the range. Rifle noise may be objectionable to some residents, especially those living off Walker Mine Road and Iron Mountain Road

near the range. Finally, noise associated with the range would be apparent to trail users on the abandoned railroad bed above Keswick Boat Ramp/OHV Staging Area.

Noise levels within French Gulch and along East Fork Road would likely remain the same due to negligible increases in motor vehicle related traffic. Motor vehicle traffic on Trinity Mountain Road would increase by approximately 10 vehicles per day, and on East Fork Road by approximately 8 vehicles per day. These small to moderate increases would not likely generate noticeable changes in motor vehicle related noise and noise levels would not be expected to exceed a L_{dn} of 55 dBA.

Air Pollution

Estimated levels of air pollution are shown in Table 4.9.

Table 4.9 Air Pollution Generation, Alternative A		
Form of Air Pollution	Estimated Grams/Day	Estimated Pounds/Year
Carbon Monoxide (CO)	39,000 to 46,100	32,000 to 37,500
Oxides of Nitrogen (NO _x)	7,000 to 8,300	5,700 to 6,700
Particulate Matter smaller than 10 microns in size (PM ₁₀)	830 to 980	670 to 790
Oxides of Sulfur (SO _x)	590 to 700	480 to 570

Socio-Cultural Resources

Full implementation of this alternative would lead to the highest level of probable impacts to cultural resources since it would lead to the greatest potential level of OHV recreation use. As such, there is more of a likelihood of users visiting or searching out cultural resources for both educational visitation, but also for innocent or nefarious collecting or damage to historic or prehistoric sites. Several sites each year may be affected in this manner or through off trail driving through the site leading to direct damage or indirect damage from erosion. More visitation to the area would be encouraged by new road and trail construction, therefore, indirect impacts to cultural sites might increase. Such trail and road development could also lead to visual and audio impacts to significant site areas.

Under this alternative, if vehicle traffic increased by only 10 vehicles per day on Trinity Mountain Road near the community of French Gulch, then there would be less visual and auditory intrusion within this historic community than the No Action Alternative. Similarly, if vehicle traffic increased by only 3 vehicles per a day on Cline Gulch Road one mile west of the Gladstone Mine Complex, then there would be a less visual and auditory on the road providing access to this historic feature than the No Action Alternative. It is difficult to predict whether increased recreation visitors within other parts of the ISRMA would have an effect on other scattered historic mining locales in the mountains.

Positive impacts to certain cultural sites may also result from this alternative, especially where historic roads and trails, including the abandoned railroad grade near Keswick Reservoir, are brought under better management through controlled access. Measures taken to interpret cultural resources may also reduce impacts.

Private Property

Some private land zoned for residential uses near Keswick Reservoir may be impacted by slight to moderate noise levels due to the development of a regional firing range located off Iron Mountain Road. The development of a greenway connecting Redding to Shasta Dam on the east side of Keswick Reservoir would likely increase the values of residentially zoned private property on the east side adjoining the ISRMA. The development of a greenway adjacent to Clear Creek would also likely increase the values of private property within the community of French Gulch. Noise from motor vehicles within the Chappie-Shasta OHV Management Area would not be heard to residents within this community over background noise levels. Finally, slight increases in motor vehicle traffic on East Fork Road and Cline Gulch Road may slightly annoy private residences that utilize these roads for primary access.

Soil Resources

Estimated amounts of road and trail related soil erosion are shown within Table 4.10.

Table 4.10 Estimated Road Related Sediment Production, Alternative A									
Road or Trail Treatment	EHR Very High		EHR High		EHR Moderate		EHR Low		Sediment Production (Tons/Year)
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	
New Roads/Trails Available for Motor Vehicle use ₁	0	0	3	2.5	10	8.5	1	0.9	29
New Trails Available for Non-Motorized Use Only ₂	0	0	0	0	1	0.6	0	0	-
Existing Roads/Trails Available for Motor Vehicle Use ₃	0	0	50	60.0	175	210.0	25	30.0	444
Existing Roads/Trails Available for Non Motorized Use Only ₄	0	0	9	10.8	32	38.4	4	4.8	49
Existing Roads/Trails Obliterated, Rehabilitated, or Available for Infrequent Administrative Uses Only ₅	0	0	2	2.4	7	8.4	1	1.2	9
Footnotes: 1. Sediment Rates for High EHR= 4.40 Tons/Acre/Year, Moderate EHR= 2.10 Tons/Acre/Year, Low EHR= 0.48 Tons/Acre/Year 2. Sediment Rates for High EHR= 1.00 Tons/Acre/Year, Moderate EHR= 0.43 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year 3. Sediment Rates for High EHR= 2.70 Tons/Acre/Year, Moderate EHR= 1.30 Tons/Acre/Year, Low EHR= 0.29 Tons/Acre/Year 4. Sediment Rates for High EHR= 1.50 Tons/Acre/Year, Moderate EHR= 0.85 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year 5. Sediment Rates for High EHR= 1.20 Tons/Acre/Year, Moderate EHR= 0.68 Tons/Acre/Year, Low EHR= 0.16 Tons/Acre/Year									

Whiskeytown Deer Herd

Under this alternative, motor vehicle travel over most roads and trails within the winter range would be closely monitored in relation to herd conditions. If use levels cause stress

and a decline in the herd, use levels would be reduced or eliminated over select roads and trails. Notable exceptions to this rule would be Cline Gulch Road and East Fork Road which provide access to a school and private residences respectively. Motor vehicle travel over these roads could cause disturbances to wintering deer, although the overall impact to the Whiskeytown herd would probably be insignificant.

Approximately 8.5 miles of new road construction would occur within the winter range under this alternative displacing about 14 acres of habitat. This habitat would be expected to be well below the amount of habitat that would be produced and maintained by achieving the desired plant communities.

Impacts of Alternative B

This section discloses what impacts would be expected due to full implementation of Alternative B.

Recreation Opportunities

OHV opportunities would likely improve within the Chappie-Shasta OHV Management Area as important land or road easements were acquired from willing sellers. Development of loop trails and roads would likely enhance OHV opportunities, and signing would likely compliment the existing network of approximately 215 miles of available road and trail. Development of OHV access points near Whiskey Creek, the Merry Mountain Site and/or New York Gulch, and at Matheson would greatly improve accessibility into the area. Development of one additional south to north corridor would ease motor vehicle travel to a network of roads and trails located north and south of Big Gulch. Overall, the Chappie-Shasta OHV Management Area could accommodate between 64,500 to 76,500 annual OHV recreation visits.

Hiking and running opportunities would moderately decline with increased OHV use on the railroad grade between the Matheson and Shasta Dam. Extending the Sacramento River Trail northward to Matheson would improve hiking and running opportunities, but the potential of placing those users on a shared motor vehicle trail above Matheson is questionable. Development of a regional firing range on the east side of Keswick Reservoir would also degrade hiking and running opportunities. Development of trails within the Clear Creek Greenway would improve hiking and running opportunities. Hiking and running opportunities on the Sacramento River Trail below Keswick Dam would also improve as additional trails were developed and the bridge to Turtle Bay was completed. Overall, hiking and running use would be expected between 131,500 to 175,500 annual visits.

Mountain bike riding opportunities would greatly improve within the Sacramento River Greenway and Chappie-Shasta OHV Management Area as the Sacramento River Trail was extended north to Matheson. Some mountain bike opportunities would be lost with the development of a regional firing range on the east side of Keswick Reservoir. Mountain and road bike riding opportunities would likely improve on the Sacramento River Trail below Keswick Dam as additional trails were developed and the bridge spanning across the Sacramento River to Turtle Bay was completed. Overall, mountain and road bike riding use would be expected between 131,000 to 174,000 annual visits.

Fishing opportunities would improve within the Chappie-Shasta OHV Management Area with improved motor vehicle access to the western portion of Keswick Reservoir. Fishing opportunities would likely improve with the development of a multiple use day-use area near Clear Creek. Overall, fishing use would be expected between 27,500 to 29,500 annual visits.

Hunting opportunities may slightly improve within the Chappie-Shasta OHV Management Area with improved transportation systems. Overall, hunting use would likely remain around 1,500 annual visits.

Equestrian opportunities would slightly improve in the Sacramento River Greenway with the extension of the Sacramento River Trail to Matheson, but the potential of placing those users on a shared motor vehicle trail above Matheson is questionable. Development of a regional firing range on the east side of Keswick Reservoir would greatly reduce equestrian opportunities. Overall, equestrian use would be expected between 1,000 to 2,000 annual visits.

Hang gliding and paragliding opportunities would likely improve within the Chappie-Shasta OHV Management Area as important private lands or easements were acquired from willing sellers. Improved motor vehicle access to the Spreadeagle launching site and the South Fork Lookout launching site would benefit flyers. Overall, hang gliding and paragliding use would be expected between 200 to 500 annual visits.

Target shooting opportunities would greatly improve with the development of a regional firing range north of Walker Mine Road on the east side of Keswick Reservoir. A regional facility could be expected to accommodate between 5,000 and 10,000 annual visits.

Spending and Economic Impact

Full implementation of this alternative could generate 7.0 to 8.9 million dollars of annual visitor spending, with a resulting 18.2 to 23.1 million dollars of annual community spending associated with recreation in the ISRMA.

Motor Vehicle Traffic

Table 4.11 shows the estimated change in motor vehicle traffic over select roads with full implementation of this alternative.

Table 4.11
Expected Change in Traffic Loads, Alternative B

Federal/State/County Roadway	County Road Number	Change in Average Daily Motor Vehicle Traffic
Cline Gulch Road	5E006	plus 3
Coram Road above staging area	5G011	plus 15
Coram Road below staging area	5G011	plus 22
East Fork Road	6E002	plus 5
Highway 151 between Lake Boulevard and Shasta Dam	FAU5131	plus 15
Iron Mountain Road between North Street and Keswick Lake Ramp	4G01	plus 10
Iron Mountain Road between Keswick Lake Ramp and Matheson Road	4G01	plus 5
Keswick Lake Ramp Road	4G160	plus 5
Matheson Road	4G150	plus 5
Trinity Mountain Road	5E01	plus 8
Walker Mine Road	4G10	plus 6

Noise Levels

Noise levels are evaluated with respect to the amounts of motor-vehicle traffic and target shooting that key areas may receive. Full implementation of this alternative would slightly increase noise levels near Keswick Reservoir and retain noise levels in French Gulch and the East Fork of Clear Creek. In most regions within or near the ISRMA, noise levels would not be expected to register noticeable changes.

Preliminary noise tests were conducted April of 1991 at the potential regional firing site located north of Walker Mine Road (refer to Alternative A). Although the site is located at a different location within this alternative, noise impacts are very similar to those described within Alternative A. Noise tests indicate that noise levels would not likely exceed a L_{dn} of 55 dBA in residential areas near Keswick Reservoir, and pistol and shotgun noise would probably not be objectionable to most residents living near the range. Rifle noise may be objectionable to some residents, especially those living off Walker Mine Road and Iron Mountain Road near the range. Finally, noise associated with the range would be apparent to trail users on the abandoned railroad bed above Keswick Boat Ramp.

Noise levels within French Gulch and along East Fork Road would likely remain the same due to negligible increases in motor vehicle related traffic. Motor vehicle traffic on Trinity Mountain Road would increase by approximately 8 vehicles per day, and on East Fork Road by approximately 5 vehicles per day. These small to moderate increases would not likely generate noticeable changes in motor vehicle related noise and noise levels would not be expected to exceed a L_{dn} of 55 dBA.

Air Pollution

Estimated levels of air pollution are shown in Table 4.12.

Table 4.12 Air Pollution Generation, Alternative B		
Form of Air Pollution	Estimated Grams/Day	Estimated Pounds/Year
Carbon Monoxide (CO)	37,900 to 44,900	30,800 to 36,500
Oxides of Nitrogen (NO _x)	6,800 to 8,100	5,500 to 6,600
Particulate Matter smaller than 10 microns in size (PM ₁₀)	800 to 950	650 to 770
Oxides of Sulfur (SO _x)	580 to 680	470 to 550

Socio-Cultural Resources

Impacts to cultural resources from this alternative would fall somewhere between Alternative A and Alternative C, but lean closer to Alternative A. Perhaps several sites per year would be impacted under this alternative.

Under this alternative, if vehicle traffic increased by only 8 vehicles per day on Trinity Mountain Road near the community of French Gulch, then there would be less visual and auditory intrusion within this historic community than the No Action Alternative. Similarly, if vehicle traffic increased by only 3 vehicles per a day on Cline Gulch Road one mile west of the Gladstone Mine Complex, then there would be a less visual and auditory intrusion on the road providing access to this historic feature than the No Action Alternative. It is difficult to predict whether increased recreation visitors within other parts of the ISRMA would have an effect on other scattered historic mining locales in the mountains.

Private Property

Some private land zoned for residential uses near Keswick Reservoir may be impacted by slight to moderate noise levels due to the development of a regional firing range located off Walker Mine Road. The development of a greenway adjacent to Clear Creek would likely increase the values of private property within the community of French Gulch. Noise from motor vehicles within the Chappie-Shasta OHV Management Area would not be heard to residents within this community over background noise levels. Finally, slight increases in motor vehicle traffic on East Fork Road may slightly annoy private residences that utilize this road for primary access.

Soil Resources

Estimated amounts of road and trail related soil erosion are shown within Table 4.13.

Table 4.13
Estimated Road Related Sediment Production, Alternative B

Road or Trail Treatment	EHR Very High		EHR High		EHR Moderate		EHR Low		Sediment Production (Tons/Year)
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	
New Roads/Trails Available for Motor Vehicle use, ₁	0	0	3	2.5	9	7.6	1	0.8	27
New Trails Available for Non-Motorized Use Only, ₂	0	0	0	0	1	0.6	0	0	-
Existing Roads/Trails Available for Motor Vehicle Use, ₃	0	0	49	58.8	172	206.4	24	28.8	435
Existing Roads/Trails Available for Non Motorized Use Only, ₄	0	0	10	12.0	35	42.0	5	6.0	54
Existing Roads/Trails Obliterated, Rehabilitated, or Available for Infrequent Administrative Uses Only, ₅	0	0	2	2.4	7	8.4	1	1.2	9

Footnotes:

1. Sediment Rates for High EHR= 4.40 Tons/Acre/Year, Moderate EHR= 2.10 Tons/Acre/Year, Low EHR= 0.48 Tons/Acre/Year
2. Sediment Rates for High EHR= 1.00 Tons/Acre/Year, Moderate EHR= 0.43 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year
3. Sediment Rates for High EHR= 2.70 Tons/Acre/Year, Moderate EHR= 1.30 Tons/Acre/Year, Low EHR= 0.29 Tons/Acre/Year
4. Sediment Rates for High EHR= 1.50 Tons/Acre/Year, Moderate EHR= 0.85 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year
5. Sediment Rates for High EHR= 1.20 Tons/Acre/Year, Moderate EHR= 0.68 Tons/Acre/Year, Low EHR= 0.16 Tons/Acre/Year

Whiskeytown Deer Herd

Under this alternative, motor vehicle travel over most roads and trails within the winter range would be closely monitored in relation to herd conditions. If use levels cause stress and a decline in the herd, use levels would be reduced or eliminated over select roads and trails. Notable exceptions to this rule would be Cline Gulch Road and East Fork Road which provide access to a school and private residences respectively. Motor vehicle travel over these roads could cause disturbances to wintering deer, although the overall impact to the Whiskeytown herd would probably be insignificant.

Approximately 7 miles of new road construction would occur within the winter range under this alternative displacing about 12 acres of habitat. This habitat would be expected to be well below the amount of habitat that would be produced and maintained by achieving the desired plant communities.

Impacts of Alternative C

This section discloses what impacts would be expected due to full implementation of Alternative C.

Recreation Opportunities

OHV opportunities would likely improve within the Chappie-Shasta OHV Management Area as important land or road easements were acquired from willing sellers. Development of loop trails and roads would likely enhance OHV opportunities, and signing would likely compliment the existing network of approximately 200 miles of available road and trail. Development of OHV access points from Whiskey Creek and/or New York Gulch would greatly improve accessibility into the area. Prohibiting motor vehicle use on the railroad bed adjacent to Keswick Reservoir would cause notable losses of OHV opportunity, especially for novice riders that often make a loop from the staging area down Coram Road and return on the railroad grade. Overall, the Chappie-Shasta OHV Management Area could accommodate between 56,500 to 68,500 annual OHV recreation visits.

Hiking and running opportunities would moderately improve within the Sacramento River Greenway as the Sacramento River Trail was extended north of Keswick Dam to Shasta Dam. Vehicle access and parking areas at Motion Creek, Matheson, and the Keswick Boat Ramp would ensure that the longest segment of this trail not accessible by motor vehicle would be 3.4 miles long. Development of non-motorized trails on the east side of Keswick Reservoir would also improve hiking and running opportunities as would development of trails within the Clear Creek Greenway. Hiking and running opportunities on the Sacramento River Trail below Keswick Dam would also improve as additional trails were developed and the bridge to Turtle Bay was completed. Overall, hiking and running use would be expected between 170,000 to 214,000 annual visits.

Mountain bike riding opportunities would greatly improve within the Sacramento River Greenway and Chappie-Shasta OHV Management Area as the Sacramento River Trail was extended north to Shasta Dam. Mountain bike riders would also benefit from the development of loop trails on the eastern side of Keswick Reservoir. Mountain and road bike riding opportunities would likely improve on the Sacramento River Trail below Keswick Dam as additional trails were developed and the bridge spanning across the Sacramento River to Turtle Bay was completed. Overall, mountain and road bike riding use would be expected between 140,000 to 183,000 annual visits.

Fishing opportunities would slightly decline within the Sacramento River Greenway with the loss of vehicle access to one fishing site between Matheson and Motion Siding. Fishing opportunities would likely improve with the development of a day-use area near Clear Creek. Overall, fishing use would be expected between 26,500 to 27,500 annual visits.

Hunting opportunities would slightly decline within the Sacramento River Greenway with the extension of the Sacramento River Trail to Shasta Dam. Hunting opportunities may slightly improve within the Chappie-Shasta OHV Management Area with improved transportation systems. Overall, hunting use would likely remain around 1,500 annual visits.

Equestrian opportunities would moderately improve in the Sacramento River Greenway with the extension of the Sacramento River Trail to Shasta Dam. Development of non-motorized trails on the east side of Keswick Reservoir would also improve equestrian opportunities especially with the development of a loop system that may use the Belt Line Road. Overall, equestrian use would be expected between 1,500 to 2,500 annual visits.

Hang gliding and paragliding opportunities would likely improve within the Chappie-Shasta OHV Management Area as important private lands or easements were acquired from willing sellers. Improved motor vehicle access to the Spreadeagle launching area and the South Fork Lookout launching site would benefit flyers. Overall, hang gliding and paragliding use would be expected between 200 to 500 annual visits.

Target shooting opportunities would greatly decline within the Sacramento River Greenway with the prohibition of target shooting between Coram Road and Keswick Reservoir and north of the Keswick Boat Ramp. Reduced motor vehicle access on the east side of Keswick Reservoir may also reduce target shooting opportunities. Overall, target shooting use would be expected between 300 to 500 annual visits.

Spending and Economic Impact

Full implementation of this alternative could generate 7.4 to 9.2 million dollars of annual visitor spending, with a resulting 19.2 to 23.9 million dollars of annual community spending associated with recreation in the ISRMA.

Motor Vehicle Traffic

Table 4.14 shows the estimated change in motor vehicle traffic over select roads with full implementation of this alternative.

Table 4.14
Expected Change in Traffic Loads, Alternative C

Federal/State/County Roadway	County Road Number	Change in Average Daily Motor Vehicle Traffic
Cline Gulch Road	5E006	no change
Coram Road above staging area	5G011	plus 18
Coram Road below staging area	5G011	plus 16
East Fork Road	6E002	plus 2
Highway 151 between Lake Boulevard and Shasta Dam	FAU5131	plus 18
Iron Mountain Road between North Street and Keswick Lake Ramp	4G01	plus 20
Iron Mountain Road between Keswick Lake Ramp and Matheson Road	4G01	plus 4
Keswick Lake Ramp Road	4G160	plus 16
Matheson Road	4G150	plus 4
Trinity Mountain Road	5E01	plus 2
Walker Mine Road	4G10	plus 5

Noise Levels

Noise levels are evaluated with respect to the amounts of motor-vehicle traffic and target shooting that key areas may receive. Full implementation of this alternative would likely retain or slightly reduce noise levels near Keswick Reservoir, French Gulch and the East Fork of Clear Creek. In most regions within or near the ISRMA, noise levels would not be expected to register noticeable changes.

Near Keswick Reservoir, the development of non-motorized trails adjacent to the Reservoir and prohibition of target shooting in many areas would likely reduce some peak occurrences of noise. Motor vehicle travel on Coram road below the staging area would likely increase resulting in slight increases in noise for residences living adjacent to this road and land zoned for residential development northwest of Motion Siding. In both areas, L_{dn} noise levels would likely remain below 55 dBA. Residentially zoned land located in the community of Keswick and near Eastshore Road would also retain L_{dn} noise levels less than 55 dBA.

Noise levels within French Gulch and along East Fork Road would likely remain the same due to negligible increases in motor vehicle related traffic. Motor vehicle traffic on Trinity Mountain Road would increase by approximately 2 vehicles per day, and on East Fork Road by approximately 2 vehicles per day. These small increases would not likely generate noticeable changes in motor vehicle related noise and noise levels would not be expected to exceed a L_{dn} of 55 dBA.

Air Pollution

Estimated levels of air pollution are shown in Table 4.15.

Table 4.15
Air Pollution Generation, Alternative C

Form of Air Pollution	Estimated Grams/Day	Estimated Pounds/Year
Carbon Monoxide (CO)	33,200 to 40,200	27,000 to 32,700
Oxides of Nitrogen (NO _x)	6,600 to 7,700	5,400 to 6,300
Particulate Matter smaller than 10 microns in size (PM ₁₀)	700 to 850	570 to 690
Oxides of Sulfur (SO _x)	500 to 610	410 to 500

Socio-Cultural Resources

Full implementation of all of the action alternatives, on balance, would lead to an unspecified, but generally low, level of increased archaeological site damage. The difference between this alternative and the other three action alternatives is probably in the 5 to 10 percent range depending upon the various factors mentioned within the "Impacts Common To All Alternatives" section. More specifically, this alternative would lead to 5 to 10 percent less potential impacts to cultural resources than the No Action Alternative. However, all action alternatives will increase potential cultural impacts by as much as 10 percent (or damage 2 to 3 sites or less per year) without careful site conservation and other impact mitigating actions.

Under this alternative, if vehicle traffic increased by only 2 vehicles per day on Trinity Mountain Road near the community of French Gulch, then there would be less visual and auditory intrusion within this historic community than the No Action Alternative. Similarly, if vehicle traffic remained the same on Cline Gulch Road one mile west of the Gladstone Mine Complex, then there would be no new visual and auditory intrusion on the road that provides access to this historic feature. It is difficult to predict whether increased recreation visitors within other parts of the ISRMA would have an effect on other scattered historic mining locales in the mountains.

Development of loop roads and trails, and additional access points, could lead to potential indirect impacts depending largely on alignment and judicious signing and oversight by law enforcement personnel and others. Damage to sites from wildfires is another threat and may be more likely with increased visitation, especially by those camping or lacking proper spark control devices on motor vehicles.

On the positive side, trails and roads with proper signing can enhance heritage education and reduce some levels of illegal collecting and/or inadvertent damage to sites. Brochures, visitor contact, displays and occasional talks may help lessen damage. Furthermore, having organized groups serve as watchdogs may also help alleviate cultural resource losses.

Private Property

Full implementation of this alternative would require one private landowner with a

residence near Motion Siding to find different motor vehicle access to the property. The abandoned railroad grade is currently used by this landowner to access the property, but no rights have been granted for this use. It is likely that this landowner would be granted a reasonable period of temporary use on the railroad grade while alternative access was arranged. Existing roads to this private property would need to be improved so that motor vehicle access could be secured.

Private land zoned for residential uses near Keswick Reservoir would likely benefit from reduced noise levels due to target shooting prohibitions, and the development of a greenway connecting Redding to Shasta Dam would likely increase the values of residentially zoned private property on both sides of Keswick Reservoir. The development of a greenway adjacent to Clear Creek would also likely increase the values of private property within the community of French Gulch. Finally, reduced motor vehicle traffic on East Fork Road and Cline Gulch Road would likely benefit private residences that utilize these roads for primary access.

Soil Resources

Estimated amounts of road and trail related soil erosion are shown within Table 4.16.

Table 4.16 Estimated Road Related Sediment Production, Alternative C									
Road or Trail Treatment	EHR Very High		EHR High		EHR Moderate		EHR Low		Sediment Production (Tons/Year)
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	
New Roads/Trails Available for Motor Vehicle use ₁	0	0	0	0	2	1.7	0	0	4
New Roads Available for Non-Motorized Use Only ₂	0	0	0	0	1	0.6	0	0	4
Existing Roads Available for Motor Vehicle Use ₃	0	0	47	56.4	165	198.0	23	27.6	418
Existing Roads Available for Non Motorized Use Only ₄	0	0	12	14.4	42	50.4	6	7.2	65
Existing Roads Obliterated, Rehabilitated, or Available for Infrequent Administrative Uses Only ₅	0	0	2	2.4	7	8.4	1	1.2	9
Footnotes:									
1. Sediment Rates for High EHR= 4.40 Tons/Acre/Year, Moderate EHR= 2.10 Tons/Acre/Year, Low EHR= 0.48 Tons/Acre/Year									
2. Sediment Rates for High EHR= 1.00 Tons/Acre/Year, Moderate EHR= 0.43 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year									
3. Sediment Rates for High EHR= 2.70 Tons/Acre/Year, Moderate EHR= 1.30 Tons/Acre/Year, Low EHR= 0.29 Tons/Acre/Year									
4. Sediment Rates for High EHR= 1.50 Tons/Acre/Year, Moderate EHR= 0.85 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year									
5. Sediment Rates for High EHR= 1.20 Tons/Acre/Year, Moderate EHR= 0.68 Tons/Acre/Year, Low EHR= 0.16 Tons/Acre/Year									

Whiskeytown Deer Herd

Under this alternative, motor vehicle travel over most roads and trails within the winter range would be closely monitored in relation to herd conditions. If use levels cause stress and a decline in the herd, use levels would be reduced or eliminated over select roads and trails. Notable exceptions to this rule would be Cline Gulch Road and East Fork Road which provide access to a school and private residences respectively. Motor vehicle travel over these roads could cause disturbances to wintering deer, although the

This section discloses what impacts would be expected due to full implementation of Alternative D.

Recreation Opportunities

OHV opportunities would likely improve within the Chappie-Shasta OHV Management Area as important land or road easements were acquired from willing sellers. Development of loop trails and roads would likely enhance OHV opportunities, and signing would likely compliment the existing network of approximately 210 miles of available road and trail. Development of OHV access points from Whiskey Creek and/or New York Gulch would greatly improve accessibility into the area. Development of two additional south to north corridors would ease motor vehicle travel to a network of roads and trails located north and south of Big Gulch. Prohibiting motor vehicle use on most of the railroad bed adjacent to Keswick Reservoir would cause notable losses of OHV opportunity, especially for ATV riders that often make a loop from the staging area down Coram Road and return on the railroad grade. Overall, the Chappie-Shasta OHV Management Area could accommodate between 63,500 to 75,500 annual OHV recreation visits.

Hiking and running opportunities would moderately improve within the Sacramento River Greenway as the Sacramento River Trail was extended north of Keswick Dam to Shasta Dam. Vehicle access and parking areas at Motion Siding, Motion Creek, Matheson, and the Keswick Boat Ramp would ensure that the longest segment of this trail not accessible by motor vehicle would be 2.2 miles long. Allowing motor vehicle access on the railroad grade between Matheson and Motion Siding and development of a regional firing range on the east side of Keswick Reservoir may detract from some primitive hiking and running opportunities. Development of non-motorized trails on the east side of Keswick Reservoir would also improve hiking and running opportunities as would development of trails within the Clear Creek Greenway. Hiking and running opportunities on the Sacramento River Trail below Keswick Dam would also improve as additional trails were developed and the bridge to Turtle Bay was completed. Overall, hiking and running use would be expected between 163,500 to 207,500 annual visits.

Mountain bike riding opportunities would greatly improve within the Sacramento River Greenway and Chappie-Shasta OHV Management Area as the Sacramento River Trail was extended north to Shasta Dam. Mountain bike riders would also benefit from the development of loop trails on the eastern side of Keswick Reservoir. Mountain and road bike riding opportunities would likely improve on the Sacramento River Trail below Keswick Dam as additional trails were developed and the bridge spanning across the Sacramento River to Turtle Bay was completed. Overall, mountain and road bike riding use would be expected between 135,000 to 178,000 annual visits.

Fishing opportunities would slightly improve within the Sacramento River Greenway by providing motor vehicle access to Keswick Reservoir between Matheson and Motion Siding. Fishing opportunities would likely improve with the development of a multiple use day-use area near Clear Creek. Overall, fishing use would be expected between 27,500 to 29,500 annual visits.

Hunting opportunities would slightly decline within the Sacramento River Greenway with the extension of the Sacramento River Trail to Shasta Dam. Hunting opportunities may slightly improve within the Chappie-Shasta OHV Management Area with improved transportation systems. Overall, hunting use would likely remain around 1,500 annual visits.

Equestrian opportunities would slightly improve in the Sacramento River Greenway with the extension of the Sacramento River Trail to Shasta Dam, although the success of placing those users on a short segment of shared trail between Matheson and Motion Siding is suspect. Development of a regional firing range off Walker Mine Road would degrade equestrian opportunities on some segments of the railroad grade and the east side of Keswick Reservoir. Overall, equestrian use would be expected between 1,500 to 2,500 annual visits.

Hang gliding and paragliding opportunities would likely improve within the Chappie-Shasta OHV Management Area as important private lands or easements were acquired from willing sellers. Improved motor vehicle access to the Spreadeagle launching area and the South Fork Lookout launching site would benefit flyers. Overall, hang gliding and paragliding use would be expected between 200 to 500 annual visits.

Target shooting opportunities would greatly improve with the development of a regional firing range on the east side of Keswick Reservoir near Walker Mine Road. Overall, target shooting use would be expected between 5,000 to 10,000 annual visits.

Spending and Economic Impact

Full implementation of this alternative could generate 7.4 to 9.3 million dollars of annual visitor spending, with a resulting 19.2 to 24.1 million dollars of annual community spending associated with recreation in the ISRMA.

Motor Vehicle Traffic

Table 4.17 shows the estimated change in motor vehicle traffic over select roads with full implementation of this alternative.

Table 4.17
Expected Change in Traffic Loads, Alternative D

Federal/State/County Roadway	County Road Number	Change in Average Daily Motor Vehicle Traffic
Cline Gulch Road	5E006	plus 2
Coram Road above staging area	5G011	plus 20
Coram Road below staging area	5G011	plus 22
East Fork Road	6E002	plus 7
Highway 151 between Lake Boulevard and Shasta Dam	FAU5131	plus 20
Iron Mountain Road between North Street and Keswick Lake Ramp	4G01	plus 22
Iron Mountain Road between Keswick Lake Ramp and Matheson Road	4G01	plus 7
Keswick Lake Ramp Road	4G160	plus 15
Matheson Road	4G150	plus 7
Trinity Mountain Road	5E01	plus 9
Walker Mine Road	4G10	plus 10

Noise Levels

Noise levels are evaluated with respect to the amounts of motor-vehicle traffic and target shooting that key areas may receive. Full implementation of this alternative would slightly increase noise levels near Keswick Reservoir and retain noise levels near French Gulch and the East Fork of Clear Creek. In most regions within or near the ISRMA, noise levels would not be expected to register noticeable changes.

Preliminary noise tests were conducted April of 1991 at the potential regional firing site located north of Walker Mine Road (refer to Alternative A). Although the site is located at a different location within this alternative, noise impacts are very similar to those described within Alternative A. Noise tests indicate that noise levels would not likely exceed a L_{dn} of 55 dBA in residential areas near Keswick Reservoir, and pistol and shotgun noise would probably not be objectionable to most residents living near the range. Rifle noise may be objectionable to some residents, especially those living off Walker Mine Road and Iron Mountain Road near the range. Finally, noise associated with the range would be apparent to trail users on the abandoned railroad bed above Keswick Boat Ramp.

On the east side of Keswick Reservoir, the development of non-motorized trails adjacent to the Reservoir and prohibition of target shooting in many areas would likely reduce some peak occurrences of noise. Motor vehicle travel on Coram road below the staging area would likely increase resulting in slight increases in noise for residences living adjacent to this road and land zoned for residential development north of Motion Siding. In both areas, L_{dn} noise levels would likely remain below 55 dBA. Residentially zoned land located in the community of Keswick and near Eastshore Road would also retain L_{dn}

noise levels less than 55 dBA.

Noise levels within French Gulch and along East Fork Road would likely remain the same due to negligible increases in motor vehicle related traffic. Motor vehicle traffic on Trinity Mountain Road would increase by approximately 9 vehicles per day, and on East Fork Road by approximately 7 vehicles per day. These small increases would not likely generate noticeable changes in motor vehicle related noise and noise levels would not be expected to exceed a L_{dn} of 55 dBA.

Air Pollution

Estimated levels of air pollution are shown in Table 4.18.

Table 4.18 Air Pollution Generation, Alternative D		
Form of Air Pollution	Estimated Grams/Day	Estimated Pounds/Year
Carbon Monoxide (CO)	37,300 to 44,300	30,300 to 36,000
Oxides of Nitrogen (NO _x)	6,700 to 8,000	5,400 to 6,500
Particulate Matter smaller than 10 microns in size (PM ₁₀)	790 to 940	640 to 760
Oxides of Sulfur (SO _x)	570 to 670	460 to 540

Socio-Cultural Resources

Impacts to cultural resources from this alternative would fall somewhere between Alternative A and Alternative C, but lean closer to the Alternative A. Perhaps only a few cultural sites per year would be impacted under this alternative.

Under this alternative, if vehicle traffic increased by only 9 vehicles per day on Trinity Mountain Road near the community of French Gulch, then there would be less visual and auditory intrusion within this historic community than the No Action Alternative. Similarly, if vehicle traffic increased by only 2 vehicles per a day on Cline Gulch Road one mile west of the Gladstone Mine Complex, then there would be a less visual and auditory intrusion on the road providing access to this historic feature than the No Action Alternative. It is difficult to predict whether increased recreation visitors within other parts of the ISRMA would have an effect on other scattered historic mining locales in the mountains.

Private Property

Full implementation of this alternative would allow one private landowner with a residence near Motion Siding to retain current access to the property. The abandoned railroad grade is currently used by this landowner to access the property, but no rights have been granted for this use. The development of a multiple-use staging area below this property near Motion Siding may cause some undesirable noise for this landowner.

Some private land zoned for residential uses near Keswick Reservoir may be impacted by slight to moderate noise levels due to the development of a regional firing range located off Walker Mine Road. The development of a greenway adjacent to Clear Creek would likely increase the values of private property within the community of French Gulch. Finally, reduced motor vehicle traffic on East Fork Road and Cline Gulch Road would likely benefit private residences that utilize these roads for primary access.

Soil Resources

Estimated amounts of road and trail related soil erosion are shown within Table 4.19.

Table 4.19 Estimated Road Related Sediment Production, Alternative D									
Road or Trail Treatment	EHR Very High		EHR High		EHR Moderate		EHR Low		Sediment Production (Tons/Year)
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	
New Roads/Trails Available for Motor Vehicle use ₁	0	0	3	2.5	10	8.5	1	.9	29
New Roads Available for Non-Motorized Use Only ₂	0	0	0	0	1	.6	0	0	-
Existing Roads Available for Motor Vehicle Use ₃	0	0	49	58.8	172	206.4	24	28.8	435
Existing Roads Available for Non Motorized Use Only ₄	0	0	10	12.0	35	42.0	5	6.0	54
Existing Roads Obliterated, Rehabilitated, or Available for Infrequent Administrative Uses Only ₅	0	0	2	2.4	7	8.4	1	1.2	9
Footnotes: 1. Sediment Rates for High EHR= 4.40 Tons/Acre/Year, Moderate EHR= 2.10 Tons/Acre/Year, Low EHR= 0.48 Tons/Acre/Year 2. Sediment Rates for High EHR= 1.00 Tons/Acre/Year, Moderate EHR= 0.43 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year 3. Sediment Rates for High EHR= 2.70 Tons/Acre/Year, Moderate EHR= 1.30 Tons/Acre/Year, Low EHR= 0.29 Tons/Acre/Year 4. Sediment Rates for High EHR= 1.50 Tons/Acre/Year, Moderate EHR= 0.85 Tons/Acre/Year, Low EHR= 0.10 Tons/Acre/Year 5. Sediment Rates for High EHR= 1.20 Tons/Acre/Year, Moderate EHR= 0.68 Tons/Acre/Year, Low EHR= 0.16 Tons/Acre/Year									

Whiskeytown Deer Herd

Under this alternative, motor vehicle travel over most roads and trails within the winter range would be closely monitored in relation to herd conditions. If use levels cause stress and a decline in the herd, use levels would be reduced or eliminated over select roads and trails. Notable exceptions to this rule would be Cline Gulch Road and East Fork Road which provide access to a school and private residences respectively. Motor vehicle travel over these roads could cause disturbances to wintering deer, although the overall impact to the Whiskeytown herd would probably be insignificant.

Approximately 8.5 miles of new road construction would occur within the winter range under this alternative displacing about 14 acres of habitat. This habitat would be expected to be well below the amount of habitat that would be produced and maintained by achieving the desired plant communities.

CHAPTER 5: CONSULTATION AND COORDINATION



Chapter 5: CONSULTATION AND COORDINATION

BLM consulted with a variety of different agencies, private landowners, user groups, organizations and interested individuals in the preparation of the ISRMA plan. The planning effort embraced the concept of ecosystem management with entities attempting to coordinate actions across a patchwork of different jurisdictions. This chapter describes the coordinated planning effort and discloses the agencies, organizations and individuals involved.

Preliminary Interagency Coordination

On February 28th, 1994 BLM hosted an interagency meeting with public agencies interested in management within the ISRMA. Representatives from the Bureau of Reclamation, California Department of Parks and Recreation, Western Area Power Administration, City of Shasta Lake, Shasta County and California Department of Fish and Game attended.

Individuals attending the meeting helped identify topics that needed to be addressed within the plan and offered suggestions on the types of resource information that was required to make wise resource decisions. The list of issues that the group helped develop is identified within Chapter One and was modified as additional issues were identified by private landowners and public land users.

Private Landowner Workshop

On April 7th, 1994 BLM hosted a workshop with landowners having land within the ISRMA. Approximately 250 landowners were invited to participate at the workshop and offer insight regarding the scope and issues for the planning effort. Landowners that attended were asked to help identify items that needed to be considered when preparing the plan.

Approximately 100 landowners attended the workshop. Most of the landowners were from the French Gulch area and were concerned with the potential development of an off-highway vehicle staging area. The notes below were collected at the workshop:

Workshop Notes
"How do we keep OHV use off hiking and equestrian trails?"
"Trails are chewed up by motorcycles, not foot traffic."
"At least 45 cars/motorcycles are going up the railroad grade daily. Would like to see (green sticker?) funds used to pave the road."
"Want a firing range established in the area to protect private land and people."

Workshop Notes
"How to enforce use within unauthorized area?"
"BLM has limited resources, so...why increase use?"
"Dead trees on BLM along East Fork of Clear Creek constitute a hazard (and could provide revenue)."
"Garbage is strewn in many areas, how can you control?"
"The River Trail corridor should be for non-motorized use (railroad bed)?"

Workshop Notes

"A staging area does not help manage OHV use. They are unregulated."

"The OHV Area is not adequately patrolled by rangers. Addition of one more [ranger] will not help due to patrol of Grass Valley Creek Watershed."

"More people lead to more fire hazard."

"Opposed to Staging Area anywhere in the French Gulch Area."

"How do we propose to limit vandalism in the area - especially when expanding."

"Don't continue to degrade the natural environment (wildlife especially) by expanding OHV use."

"French Gulch opposition to a staging area at Coggins Mill."

"Don't want vehicular traffic on or near private parcel (vandalism)."

"Don't have any more staging areas."

"Unregulated OHV use on East Fork Clear Creek from the staging area."

"Has there been environmental studies to see what the use is doing to the area? Need a scientific study to document damage."

"What kind of use will be allowed on the railroad grade if a hiking trail is developed? Property owners use the railroad grade for access with vehicles."

"How can you have a hiking trail go on an already designated OHV trail?"

"Mining uses constitute a hazard to recreation users, especially north of Highway 299 and East of French Gulch."

"What happened to Wintu of the area? Are there known sites?"

"Don't expand the boundaries of the existing OHV part of the Special Recreation Management Area?"

"Would staging areas be needed for non-motorized users?"

"The Interlakes 75,000 acre area should be a quiet zone."

"There should be a buffer zone around private property regarding noise."

Workshop Notes

"Will the planning horizon extend beyond 2008? What will happen then?"

"Concerned regarding loss of access to private property if the railroad bed becomes a trail."

"Concerned regarding access to private property in upland areas."

"Need for a firing range, but the Iron Mountain vicinity is inappropriate."

"Want a system of non-motorized trails across the entire area."

"Want to see mining allowed in the area."

"Want less law enforcement in area."

"Want more law enforcement in area."

"Can't enforce use of area now. How can we improve enforcement if expanded?"

"Want OHV users to have liability insurance (required) to protect private land owners and rights."

"Why would we increase use in French Gulch region because of wildlife, eg. bald eagles."

"Would BLM be interested in consolidating ownership in Coram area?"

"Can the decision regarding motorized use in the Record of Decision be changed?"

"[Is there a] study or survey of residents affected by the existing OHV area?"

"Don't open new/additional routes until planning is completed."

"Juveniles use trails. Need an age limit for OHV use in the area."

"Need to control use to areas that do not erode. Are there any areas like this in the area?"

"Plant only native plant species."

"Habitat for fisheries in Iron Mountain area seems unlikely. Look at closely. Pollution above Stoll Mine versus below."

"Maintain French Gulch as a museum of natural history."

"Signs are misleading regarding the degree of difficulty (also erosion)."

Workshop Notes

"OHV loop should start at Dam and return to dam, or end up at a flat near Whiskeytown."

"Water development plan for SRMA, for example, what is the long term uses of corporate lands?"

"Don't ban hunting in the area."

"Develop a realistic wildlife management plan."

"Fish and Game needs to do a study on the populations of deer, bear, mountain lion. What will OHV use do to populations?"

"Future meetings need to have representatives from other agencies involved in the area."

"What is 'Recreation Opportunity Spectrum'?"

"Want to see more involvement by corporate landowners."

"Use grant money to do research on feasibility for locations of OHV use elsewhere in the state."

"Invitations need to look 'Official' so it isn't thrown out."

"Would the new staging area allow camping? Do not want camping. Sanitation concerns in Clear Creek."

Workshop Notes

"Put development money into enforcement staff (staging area dollars)."

"Public land uses should be compatible with private land uses."

"Copely Mountain provides domestic water supply, need to protect watershed."

"Don't divert or dam water."

"If you increase use, significantly increase law enforcement personnel."

"What is going to happen to abandoned cars? Oil?"

"It is your job as a government agency to control the use of OHV, not encourage it."

"Need to educate the OHV community on courteous use."

"Need further public education/outreach before the area is proposed as a National Recreation Area."

"Distribute E-Mail number to public for input."

"Locals need to have 'more' of a say than the general public."

"Comments from the 1st French Gulch meeting needs to be included with these meeting notes."

Workshop Notes

"Section 25, Township 33 North, Range 7 West: Experiencing vandalism, possible pot growing, discourage increased OHV use, designate as mining/wildlife preserve."

"Sections 31 & 32, Township 33 North, Range 5 West, and portion of Section 36, Township 33 North, Range 6 West: First concern is access between Matheson and Motion Creek. We maintain and use the railroad grade for 18 plus years. We feel increased traffic flow will cause more vandalism, trash dumping and fire danger. We are opposed to having the River Trail expanded in this area. This area has already been designated for OHV use and fees are paid by OHV owners for this right of use."

"Sections 33 & 26, Township 33 North, Range 6 West: I live on East Fork Road and am experiencing vandalism and illegal OHV use on the road and private land. Camping is a constant concern on the land that is private - mostly from OHV vehicles."

Workshop Notes

"Sections 1 & 2, Township 32 North, Range 6 West: Superfund Site. Mining concern of off road vehicles trespassing land."

"Section 13, Township 33 North, Range 7 West (Specifically China Gulch to Old American Mine) to Section 6, Township 33 North, Range 6 West to East Fork: Has just been posted for OHV use - excessive erosion."

"Section 11, Township 32 North, Range 6 West: (Eiler Mine Area Exclude Off-Road Vehicles."

"Grizzly Gulch Area and Whiskey Creek Area - including Bright Star Mine, Merry Mountain, Deadwood Gulch, Mad Mule Gulch. Pot growers use access down Grizzly Gulch. Mining Zone, exclude off-road vehicle access and designate as a wildlife preserve."

Workshop Notes

"Sections 13, 12, 1, 36, Township 34 North, Range 7 West. In Section 13 (Cedar Gulch) an approximately 640 fire - 1/2 mile of fence was lost by trespassers. In Section 13, 640 acres across Trinity Mountain Road, Burn Day, Permit, Burning piles after thinning conifers. Vandalism - homestead burned, theft at barn, trespass gate torn down at Big Gulch, main gate winched twice, gates on Honeymoon Ridge have been winched twice. Cattle have been shot and/or lost at Big Gulch. Two mules shot at Cedar Gulch. Gate winched at Horse Camp Ridge, Big Gulch drainage. Fly fishing camp was vandalized on Clear Creek. Four-wheel drive over hill on Honeymoon Ridge. Pot plants found and irrigation at Cedar and Muddy Flat."

Workshop Notes

"French Gulch Area - Wintu burial area. East side of Clear Creek zoned HP-40, habitat protection, 40 acre minimum."

"Keswick Region - Increased traffic on railroad grade not wanted. Access to private parcel is down Matheson Mine Road to railroad grade up to private parcel near Motion."

"Keswick Region - Garbage and squatters identified on railroad grade near Motion Creek and east of Sacramento River north of Walker Mine Road."

Public Meeting

On April 24th, 1994 BLM published a Notice of Intent to prepare an environmental impact statement (EIS). On May 17th, 1994 BLM hosted a public meeting to help identify issues involved in preparing the plan and EIS. People who attended the meeting were asked to comment on the following questions: 1) What uses should occur in certain areas, and why should those uses occur there? 2) What uses should not occur in certain areas, and why shouldn't those uses occur there? 3) What resource issues should BLM (and other public agencies) pay special attention to when planning certain uses in specific areas?

Approximately 60 people attended the public meeting. Many of the people who attended the public meeting had attended the private landowner workshop as well. The comments below were recorded at the meeting:

Public Meeting Notes

"No OHV Uses"

"No law enforcement"

"Reduce property values"

"In favor of horse riding, mountain bike riding"

"Horse endurance staging area near the Clear Creek area"

"Privacy to French Gulch Residences"

"In the Clear Creek area, would like to see two of the original goals prioritized: 1) Scenic quality of the area; 2) Protection of deer winter range"

"Retain historical values of the Coggins Mill area"

"Spotted owl habitat"

Public Meeting Notes

"Local citizens having the same rights as the outside visitors"

"Merry Mountain - East side of Wild Cow / Shirt Tail Peak areas for OHV use"

"Signs on East Fork for hikers / horseback riders would be good"

"Control OHV users so they stay where they belong. OHV users are not controlled now; they are riding County Roads, private property, etc. Result of staging area would be loss of control"

"Noise pollution and environmental damage from OHV vehicles is a concern"

"Garbage from OHV users will end up all over"

"French Gulch residents are concerned about losing their peaceful, quiet way of life"

Public Meeting Notes
"Concern expressed about people shooting animals out of yards"
"Fire potential is greatly increased as a result of OHV use"
"Concern expressed about dust and erosion as a result of OHV use in French Gulch area"
"Fishing in Clear Creek is O.K. as it is more controlled"
"Hunting is O.K. in Interlakes area around French Gulch"
"Federal government should be responsible for any OHV accidents as a result of OHV use"
"If OHV area near French Gulch is established, are follow up surveys concerning resident happiness or unhappiness with the plan going to be conducted?"
"Concern expressed as to how law enforcement officials can make sure all OHV's are licensed and all rules are followed"
"Concern expressed about amount of medical calls because of OHV accidents"
"French Gulch residents do not want liability because of accidents on County Roads"
"Equestrians should be provided places to stay overnight in case of accidents or problems"
"Check points should be provided for horse riders so if something happened, someone could find them"
"Residents don't want French Gulch to lose its small town, quiet atmosphere. Motorcycles would do this"
"Some residents would be willing to work with the Federal government to establish, maintain, and patrol an equestrian area"
"Historic value of area where OHV staging area would be will be greatly impacted"
"Camping area where OHV proposed staging area would be, would be lost"
"Upgrade racing track near Shasta Dam instead of expanding OHV area towards Clear Creek and French Gulch"
"If equestrian area is formed, mountain bikes would be O.K."
"If equestrian area is formed, mountain bikes should be kept separate (eg. different trails for each)"

Public Meeting Notes
"OHV use would bring outsiders into French Gulch which some would not like"
"Concerned about destroying historical significance and quality of French Gulch"
"Concerned about extra cost and burden to maintenance of French Gulch County Park"
"Concerned with conflict of interest involving planners with special interest groups (OHV Users)"
"No extra staging area; make a loop to same staging position (Dam only)"
"Develop French Gulch and surrounding area into designated historic area"
"Provide adequate fire protection due to increased use"
"Do not want increase use with staging areas and promotion"
"Increase in dust pollution and erosion from increased use (fisheries)"
"Noise and quality of life (Drunken Gulch, East Fork Road)"
"Condemnation concerns for track or road right-of-ways"
"Interlakes area (Iron Mountain Road) should not have a shooting range (populated areas especially)"
"Protect northern spotted owl habitat and area"
"Concerned about migrating deer herd into French Gulch (Black Tail) - noise concerns, disturbing"
"Once staging area is open, will government manage, monitor and enforce OHV use and boundaries?"
"Will extra funds be given to law enforcement on a full time basis?"
"Do not cross or disturb any Indian sites"
"Do not locate staging area in Clear Creek drainage area"
"Do not disturb wildlife areas and species (OHV motorized use)"
"OHV activities do not co-exist with horses or most recreational activities"

Public Meeting Notes

"Sensitive plants should be protected against OHV impacts."

"Develop a fire prevention plan especially in Sections 1 and 2 near Iron Mountain Mine"

"Need buffer zone at Cline Gulch and Clear Creek residences to protect residences from OHV noise, also east of French Gulch"

"Develop OHV staging area across from weigh station on highway 299"

"Multiple recreation items wanted, ie. MTB's, hunting, fishing, horseback riding, hang gliding and paragliding in whole area"

"BLM should not direct OHV's to and across private land especially Shasta Dam to East Fork Road"

"Define OHV zone - Merry Mountain Ridge east, stay out of Cline Gulch, Big Gulch, East Fork"

"Police plan of area, only existing staging area"

"I want no type of activity deleterious to historical sites, environmental quality and the quality of life of residents of French Gulch, Cline Gulch, Big Gulch, and East Fork"

"Place gates on Grizzly Gulch Road and "Whiskey Creek area to limit OHV's, Mad Mule, Grizzly and Stud Horse Gulch to prevent vandalism. Close to OHV use and manage as wildlife area"

"Develop campground on East Fork Road for family type uses, non-motorized uses"

"No motorized vehicles for entire area"

"No OHV use around Iron Mountain Mine because of vandalism, trash dumping, fence and lock breaking. Residences are nearby"

"Keep Cline Gulch the way it is now. No new OHV routes in"

"Protect water quality (for water facility) in Clear Creek and tributaries above French Gulch"

"Respect wishes of French Gulch residences out of common decency"

"No campground on East Fork. Adequate signing on road; speed, public land boundaries, horseback, children"

Public Meeting Notes

"Any existing or new trails/roads should be non-motorized in East Fork Canyon because of fire danger and lack of suppression capacity"

"Mining dangers in East of Grizzly Gulch area. No OHV use. Active mining area (Mad Mule Gulch, Stud Horse Gulch)"

"OHV use effects deer winter use, prevent any activities which impact deer winter range"

"Consider the following issues: clean air and water, wildlife, silence, limit population"

"Need erosion control plan, soil studies, etc."

"No staging area on Trinity Mountain Road and no OHV use. Put staging area across from weigh station for easy access for the public"

"Bald eagle nesting on McCampbell property near French Gulch - protect it"

"Enforce noise level restrictions near residences"

"No increased funding or personnel for BLM except fire protection"

"No increased funding or personnel for BLM except fire protection & police"

"Government agencies must comply with existing laws, regulations and policies"

"Issue: OHV generated hazardous wastes (eg. fuels, anti-freeze) at staging areas"

"Want more government responsibility"

"Identify responsible agency for all problems generated in area"

"No OHV staging on East Fork. Narrow County road limits access for fire station and medical emergencies"

"Require OHV users to carry liability insurance for property damage"

"Expand OHV trails near existing staging area. No need to develop areas near French Gulch"

"Keep OHV use out of Cline Gulch, East Fork, Clear Creek drainage. Limit OHV's to areas east of above"

Public Meeting Notes

"Above area should be non motorized area (lack of fire fighting and emergency personnel)"

"Historical significance of French Gulch impacted by noise. Limit noise producing activities"

"Prevent property value decline due to OHV noise"

"French Gulch, Cline Gulch, Merry Mountain Road areas should be made available to non-OHV uses only"

"Fine violators and give dollars to Fish and Game"

"Issue: Government needs to be more sensitive to community input and concerns"

"Reduce OHV use within French Gulch - Whiskeytown elementary school adopt-a-watershed area. Especially in American Mine Road.

"Erosion problems and noise"

"French Gulch children would be adversely impacted (trapped) by OHV users in staging area on Trinity Mountain Road"

"Cline Gulch road not to be used by OHV's. Don't want OHV users traveling Cline Gulch to come into French Gulch"

"Need to identify funding of policing of area. Who is responsible?"

"Develop non-OHV trails away from existing OHV trails"

"Mountain behind French Gulch - East Clear Creek motorized recreation will cause wildlife impacts"

"Clear Creek bird fly zone - eagle and osprey"

"Plants (sensitive) penstemon filiformis, cinicola, campanula wilkinsiana, green mariposal lily (Source - Sensitive field guide plants, Shasta field guide)"

"OHV erosion on shale slopes East side of Clear Creek, decomposed granite"

"Concern for actual planning process and special interest groups"

"Concern that staff (BLM) has special interest and could possibly have special influence (OHV planner)"

"French Gulch - immediate area, where trails are going to be located. OHV specific. No mention of hiking, horses, bird-watching"

Public Meeting Notes

"OHV excludes other uses: mountain biking, horseback riding. Plan must recognize this idea"

"OHV area must be clearly defined. Focus OHV use on existing staging area"

"Exclude OHV use in my area, French Gulch, actually all vehicle use"

"Department of Fish and Game do detailed study of Whiskey Creek, Clear Creek, Highway 299, north of East Fork (Bald eagle and Red tailed hawk)"

"Spotted owl population protected: Recreational and any use should be restricted in protected areas (if stop logging, stop all use) Stop motorized use, allow un-motorized use"

"Trash collection center to help get rid of litter problem"

"Fire problems, motorcycles can cause fire problems"

"Adhere to French Gulch proposal"

"Area is big enough to provide space for all special interest activities"

"Leave OHV use in the Shasta area where it is now"

"Keswick: concerns of OHV activity there, noise, litter, fire, etc."

"No BLM sponsored firing ranges in Keswick area. Same OHV concerns as French Gulch"

"Oppose City of Redding proposal for a shooting range in 3 miles on Walker Mine Road from Lake Boulevard If pursued, property owners must be notified"

"Interpret mining history, set up designated area (call Dwight Dustshke - Historic Preservation Officer, Amy Foster, Local Wintu Barbara Murphy, E/Clampus/Vitus, Eric Ritter)"

"BLM's forest management problems include diseased and bugged trees."

"Establish RV areas, camping and facilities"

"Ready made staging area mentioned previously on NPS land"

"Hire additional law enforcement people"

"Motorized on west - nonmotorized on east side of Sacramento River and tie into BOR park/campground on east side of river (area is now closed to public)"

Public Meeting Notes

"Campground (Forest Service) understanding by OHV volunteers that it would be free use - now it is fee area - honor original agreement - make free - continued fees could jeopardize future use group support

"What inventory data exists for plants and animals? What are potentials?"

"Do emergency (eg. fire) plans exist? We need one"

"Develop cultural values and protect (prehistoric and historic)"

"Water quality is a concern. Erosion will decrease"

"Staging areas = chemical spills in adjacent waterways, litter, etc. (antifreeze, oil, etc.)"

"Coggins Mill = Mine tailings"

"Residents who rely on surface water want their water protected"

"Concern regarding traffic impacts on Highway 299 and Iron Mountain Road because of Superfund Site, shooters, dumpers, OHV's, partiers, etc."

"Sacramento River corridor between Keswick and Shasta Dams should be non-motorized, no firing range (residents have motorized access)"

"Any plant introductions should be native"

"Undertake restoration of native plant species, animals too"

"Dumping - block access, increase law enforcement"

"No water diversion or impoundment"

"Interagency Agreement to give BLM management authority on all government land"

"Signing on East Fork Road might improve motorists driving in that area (speed, curve, wildlife, children, equestrian)"

"Signing for BLM land versus private land could improve safety for residents"

Public Meeting Notes

"Concern that current uses are vaguely defined and identified and that the public and area residents don't know what is legal and what is illegal"

"Don't expand off road vehicle area - erosive soils, private property impacts, fire, vandalism"

"No new staging areas, if additional area is needed, expand existing one"

"Motorized and non-motorized can't share the same trails, safety and incompatibility"

"Poor law enforcement now, illegal recreation - landowners have no recourse and no law enforcement assistance. What are we suppose to do?"

"Plan authors and implementors should accept liability for personal or private property damage resulting from activities endorsed by the plan"

"Equestrian activities are impossible in East Fork because of vegetation (no trails)"

"Any developed trails should be limited to non-motorized traffic (Extreme fire danger - near total lack of fire control infra-structure)"

"White truck with four wheel ATV (Slow Down)"

"Existing and future trails should be designed and maintained to reduce their impact"

"Put fish in Flat Creek"

"Concern about all goals in RMP being recognized and given equal priority. Impression is that recreation and OHV are paramount and others will be ignored"

"French Gulch Area: 1st priority is maintain scenic quality, and wildlife, and peace and quiet"

"Residential area should be protected from noise created from recreation"

"East Fork Road is narrow and dangerous. Increased traffic would exacerbate the safety problems"

"Equestrian use could be compatible"

Personal Interviews with Landowners

In order to provide a relaxed atmosphere for landowners to deliberate land management possibilities, BLM conducted a series of personal interviews with landowners during the

week between June 13, 1994 to June 17, 1994. Many landowners took advantage of this opportunity to explain management problems and opportunities and the information collected was very useful in developing the plan. The discussion below summarizes the information collected during ten personal interviews:

Mad Mule Mountain Landowner: Two private landowners explained that vandalism in the area was a very important concern. A cabin located on Mad Mule Mine had been vandalized several times causing the landowners to construct a fence blocking trespass access from the Grizzly Gulch vicinity. Landowners were concerned that BLM actions may cause more public land users to frequent the area and, subsequently, vandalize their private property. Landowners also suspected that people camping near Grizzly Gulch often visited the area in which their mine was located, and may have been responsible for vandalism to their property.

Landowners were also concerned that their property contained numerous mine shafts which provided a hazard to people visiting their land. The landowners were aware of 18 mine shafts on their property and were worried that they may be liable if trespassers were injured in the shafts. The landowners recommended that BLM restrict public access over the road which leads to their property and manage the area for wildlife values.

East Fork Road Landowner: One landowner with 20 acres and a residence on East Fork Road discussed numerous items that he felt important. The landowner mentioned that East Fork Road had a posted speed limit of 15 mph and that motorcycles were not obeying the posted speed limit. The landowner also mentioned that a school bus stop was located at the intersection of East Fork Road and Trinity Mountain Road. The landowner suspected that most of the motorcycles he has encountered on East Fork Road were not "street legal" motorcycles. The landowner also explained that motorcycle riders were flagging routes along the road and often had little respect for the natural environment. The landowner cited one instance where dead animals were tied onto trees with the same flagging that was used to delineate routes.

The landowner explained that the County road extended towards Alder Gulch and ended at a BLM parcel. The landowner mentioned that illegal road hunting also occurred on East Fork Road and that the California Department of Fish and Game was pretty good at responding to law enforcement calls. The landowner also mentioned that East Fork Road was a popular haul route for logging trucks and that most of the mining claims adjacent to the road were used infrequently.

The landowner explained that 15 residents live along East Fork Road and are served by a telephone line which extends all the way up towards a BLM parcel in section 28, T. 34 N., R. 6 W.. The landowner also explained that powerlines do not extend all along the East Fork Road, but end at a BLM parcel located in section 31, T. 34 N., R. 6 W. The residence of this particular landowner was served by a solar panel.

The landowner recommended that off-highway vehicles be excluded from a corridor which encompassed East Fork Road and that BLM provide more law enforcement presence in the area. The landowner suggested that recreational use in the area be regulated through a permit system where people visiting the area would not be allowed to enter without a permit. The landowner indicated that there were no signs on the road which explained that off-highway vehicles were prohibited.

Ellis Claim Landowner: One absentee landowner with a 15 acre mining claim discussed land management south of Mammoth Mountain. The landowner mentioned that his parcel had sentimental value to his family and that he had no plans to mine or develop the land. The landowner suggested that recreational use be allocated through regulations. The landowner indicated that intensive recreational development should not occur, but the area should be left relatively "wild" in character. The landowner also indicated that BLM should consider Open Space Trusts with adjoining private land.

Trinity Mountain Road Landowner: One landowner having a residence on Trinity Mountain Road discussed land management issues and concerns near French Gulch. The landowner explained that people (recreationists) are not responsible and do not behave. The landowner recommended that the area be left alone, and that no new roads and trails should be developed. The landowner indicated that there had been an increase in traffic within French Gulch, increase in squatters, decrease in animals (skunk, porcupine, raccoons, etc.), and more cougars. The landowner was very concerned with fire danger within the area.

The landowner indicated that people on off-highway vehicles do not stay on trails particularly where the ground is flat. The landowner indicated that if a staging area is ever developed, it should be staffed with an attendant. The landowner mentioned that people should not be encouraged to travel from staging area to staging area, but people should begin and end their trip from the same location.

The landowner mentioned that users should pay a fee to use the trail systems and that off-highway vehicle riders should sign a register so that BLM knows who visits the area, and when they will return. The landowner mentioned that additional law enforcement personnel would be desirable within French Gulch and that East Fork Road should be gated to prevent ingress and egress.

Iron Mountain Road Landowner: One landowner having a residence on Iron Mountain Road and unimproved property overlooking Keswick Reservoir discussed management problems within the region. The landowner indicated that there had been a past interest in his property by the City of Redding to develop a regional firing range. The landowner indicated that he had no real plans to develop the property but would be interested in selling/exchanging his land to BLM if he knew how it would be managed. The landowner identified garbage, shooting and squatting problems in many areas

adjacent to Iron Mountain Road on both BLM and Bureau of Reclamation (BR) lands. The landowner was not opposed to off-highway vehicle usage within the area and was a motorcycle rider himself. The landowner suggested that Matheson Mine could be interpreted for its historical significance and mentioned that camping may be appropriate adjacent to Keswick Reservoir.

Northern Clear Creek Landowner: One landowner managing a large ranch encompassing Clear Creek discussed management concerns in the north west portion of the ISRMA. The landowner was uncomfortable that the ISRMA encompassed lands that he owned. The landowner recommended that the boundary be adjusted to exclude his property. The landowner was concerned that the boundary may generate a potential liability to him.

The landowner thought that there was a need for a staging area and trail system which would provide motorized access into the trail systems in the northeastern portion of the ISRMA. The landowner recommended that BLM look at several sites for a staging area, but did not think that the Coggins Mill area was a bad site. The landowner also recommended that BLM look at alternative locations near Grizzly Gulch.

The landowner mentioned that his property was being damaged by off-highway vehicle users traveling from the east because two roads extended into his property towards Clear Creek. The landowner mentioned that these roads needed to be closed to off-highway vehicles, but might need to be used for fire protection purposes.

The landowner promotes recreational use on his property by leasing land to a fly fishing organization. This organization brings clients onto his property where they camp and fish in a peaceful setting. Both the landowner and fly fishing organization were concerned that the peaceful setting could be degraded by motorized recreation adjacent to his parcel.

The landowner explained that his property was also managed to promote timber growth, maintain water quality, maintain and improve wildlife habitat, prevent man-caused fires, reduce estate liabilities and protect property improvements. The landowner recommended that adjacent private land, as well as private land within the boundaries of any BLM administrative area, be well marked on maps available to the public and that respect for private property should be stressed.

East Fork Road and Trinity Mountain Road Landowner: Two landowners having land near the intersection of East Fork Road and Trinity Mountain Road discussed management within the region. The landowners mentioned that wintering deer populations in the area may have been reduced when black oaks (acorn source) were removed during various timber sales. The landowner also mentioned that deer hunting was more prevalent in the area years ago.

The landowner pointed out that the Sacramento River drainage currently has most of the motorized recreation uses and that additional law enforcement presence within the French Gulch/Clear Creek area was not desirable. The landowner feared that any recreational development near Clear Creek may attract additional people into the quiet community.

The landowner suspected that there was less activity within French Gulch today than there had been 30 years ago. The landowner mentioned that hunting and logging was once more popular and evident in the French Gulch area. The landowner pointed out that there has been more signs of mountain lions within the region. Finally, the landowner recommended that BLM attempt to preserve the area if possible.

Big Gulch Area Landowner: One individual representing various landowners in the Big Gulch Area discussed management possibilities. The individual mentioned that he had a cabin on his parcel which had been vandalized years ago. The landowners he represented were interested in selling or exchanging their property with BLM.

Drunken Gulch Area Landowner: One landowner with 50 acres near Drunken Gulch discussed land management and history within the area. The landowner described the relevance of Coggins Mill and mentioned that she did not want to see more off-highway vehicle traffic near Drunken Gulch. The landowner mentioned that some landowners were working with the California Department of Fish and Game in restoring deer winter range. The landowner also mentioned that some landowners were getting tree planting assistance through the U.C. Agricultural Extension Service (AES). The landowner mentioned that star thistle was a problem on her property and that the AES was providing assistance through the introduction of a weevil. The landowner finally mentioned that she didn't think that there were more mountain lions in the area.

Iron Mountain Road Landowner: One landowner having a residence on Iron Mountain Road discussed many items within the Keswick/Iron Mountain region. The landowner supported the extension of the Sacramento River Trail, but thought that one landowner would need to drive on the railroad grade to access his property. The landowner was concerned with fire danger and pointed out that campers often had open fires during fire season.

The landowner mentioned that off-highway vehicles did cause some problems on her property and that the North Fork Flat Creek watershed needed to be protected because it provided her drinking water. The landowner described that an impoundment had been constructed just above the North Fork and Flat Creek confluence.

The landowner mentioned that there had once been an historic water ditch along Flat Creek which ran towards the Sacramento River below Motion. A hydroelectric plant used this water and was the first hydroelectric plant in Shasta County. The landowner also mentioned that the Flat Creek mining district was the first mining district in Shasta County

and that Keswick was once known as "Green Whiskers" because the residents worked in the mines and would accumulate ore deposits in their beards which made them appear green.

The landowner described problems she was having with flooding in Flat Creek and attributed the flooding to Spring Creek which was diverted to Flat Creek as part of the Iron Mountain Mine clean up effort. The landowner mentioned that a levee protects her residence from rising Flat Creek waters, but the levee had been breached during past storms.

Correspondence

BLM received numerous letters from individuals and organizations regarding the ISRMA planning effort. Many letters were received by BLM and the National Park Service before the ISRMA planning effort began pertaining to a potential staging area near the community of French Gulch. Other letters were received by BLM following private landowner workshops and public scoping meetings. A summary of the written sentiments are provided below.

Public Meeting Correspondence: Following the May 17, 1994 public meeting, BLM received numerous letters regarding the ISRMA planning effort. Most of the 21 letters received were from members of the Redding Dirt Riders, a local club of OHV enthusiasts. Excerpts from a letter which best embodies the sentiments of most received is provided below:

BLM, Area Manager

June 22, 1994

Dear Mr. Morse;

This letter is in response to the issues being worked on during the planning process for the Redding Resource Management Plan. I have lived in Redding for 8 years and am married and have two children. My family is an active user of the parks and forests in the area and supports multiple use on land use issues.

After looking over the topics being addressed through your coordinated planning effort, I would like to comment on the following:

The greenway that will connect the River Trail to Shasta Dam should be left as is - multiple use for both motorized and non-motorized traffic. If an exclusive hiking trail is developed, it should go on the opposite side of the river from the OHV area. An excellent suggestion is to connect it into the Bureau of Reclamation Park located on that side on the dam which is now closed to the public.

Access to the river between Shasta Dam and Keswick Dam is adequate now. Leave it as is, with access for vehicles and foot traffic. Many people access this area now for fishing, berry picking, etc., and no area should be closed to anyone.

Access to and from the staging areas, trailheads, etc., should be from the north, west, and the existing dam areas. A suggestion here would be to apply for green sticker funds to help build a connecting route from Sugarloaf or Lakehead. This would also be in keeping with the trails system being developed by the California State Department of Parks and Recreation.

Emergencies in the area can be addressed by providing vehicular access. No trails should be closed. Rehabilitation of trails should only be done in certain main route instances to provide emergency access. OHV users should have opportunities to use trails of varying degrees of difficulty. Rather than closing trails, a rating or ranking system should be employed which will mark the degree of difficulty.

Consultation and Coordination

Limiting use of any area to non-motorized traffic should not be considered. This denies access to the disabled, the elderly, the very young, and some people who are just "out of shape". Keep the entire area multiple use....

...Camping should be allowed within the entire area. Limits on time (14 days maximum) are OK. Closing areas to natural or manmade hazards? I am opposed to closing areas of public land. Post warning signs. The government cannot manage stupidity, nor should they try.

Land acquisitions should be made to build the new staging area and possible connecting pieces to the north. The OHV management area boundaries should allow for growth and access into the Statewide Trail system.

Timber harvest should be available with appropriate mitigation measures. Limit non-recreational activity only to the extent that it endangers the recreationists. It is public land...

...Target shooting areas should be provided. There is also a shooting range on Bureau of Reclamation property which is closed to the public that should be opened to them.

Vandalism to private property is a job for local law enforcement - this is not an issue. Hunters should be allowed access to the areas in accordance with current laws. Wildfires would be easier to fight with more roads in the area.

Signing areas with a rating system, names of landmarks, etc., should be done. Funding sources should include grants as well as current budget dollars. Organized events should continue to be allowed under the current permit system...

French Gulch Correspondence: On September 1, 1993 BLM and the National Park Service hosted a joint scoping meeting regarding potential development of a staging area south of French Gulch on National Park Service land. Most landowners from the community of French Gulch opposed the proposal and mailed letters identifying their concerns. Nearly 70 letters were received from residents of French Gulch with only a few supporting the development of a staging area at a site locally referred to as Coggins Mill. Letters identified major concerns over noise, dust, litter, vandalism, fire danger, and traffic congestion.

A committee representing the French Gulch community prepared a report summarizing local attitudes regarding the staging area proposal. This report, called A Statement of Community Opposition to the Coggins Mill Off-Highway Vehicle Staging Area, is available for review at BLM's Redding office. The report proposed the following seven actions related to lands within the ISRMA:

-
1. Coggins Mill should be excluded as an off-highway vehicle staging area site.
 2. Coggins Mill should be restored as a logging mill site in a manner similar to the restoration of the National Park Service's Tower District.
 3. All existing access roads leading to the community of French Gulch should be made inaccessible to off-highway vehicles (eg. Cline Gulch Road, Eastfork Road, and Trinity Mountain Roads).
 4. Roads crossing National Park Service lands into the OHV management area should be limited to providing access for emergency purposes only.
 5. The existing staging area below Shasta Dam should be expanded and no new staging areas should be developed.
 6. A forth of the land between Clear Creek and the Sacramento River should be established for equestrian and non-motorized usage.

Recreation Advisory Panel

Between October of 1994 to February of 1995, BLM sought recommendations from an informal panel composed of recreationists representing diverse interests. Issues identified by the panel were considered as input solicited in compliance with the National Environmental Policy Act (NEPA) of 1969. NEPA requires agencies to make diligent efforts to involve the public in preparing and implementing plans. The panel was aware that it was not a decision-making body, and recommendations generated by the panel are consistent with the Federal Advisory Committee Act (FACA) and NEPA. Notes generated through discussions with the advisory panel are public record of the planning effort and are available for review at BLM's Redding office.

ISRMA Plan Contributors

The following individuals, agencies, or organizations assisted with the planning effort or provided direct input into the ISRMA plan for which BLM is grateful:

- * Jerry Asher, Mary Zwaga, Bob Warren, Bob Creighton, Ted Klaseen, Judy Lacy, Rudy Balma, David Britton, Dick Laughlin and Jim Westlake of the Interlakes Recreation Advisory Panel.
- * Terry Hansen and Jim King of the City of Redding.
- * Steve Carter and Joe Hunter of the City of Shasta Lake.
- * Doug Latimer, John McCamman, Pat Cecil, Richard Curry, Molly Wilson and Irwin Fust of Shasta County.
- * Cliff Glidden, Larry Helm, Ken Pierce, Grant Jensen, Lowell Landowski, Hugh McGuigan, and Charles Willard of the California Department of Parks and Recreation.
- * Tom Stone, Dave Smith and Harry Rectenwald of the California Department of Fish and Game.
- * Dennis Heiman of the California Regional Water Quality Control Board.
- * Paul Capener, Floyd Summers, John Farmwold, Spenser Hovecamp, Bill Gibbons, Will Kleck, Diane Hanson, and Bill Mock of the USDI Bureau of Reclamation.
- * Ken Showalter, Maryellen Grigsby, Ralph Phipps, Pat Kennedy, and Dr. Winfield Henn of the USDA Forest Service.

- * Dave Pugh, Ray Foust and Bud Ivey of the USDI National Park Service.
- * Earl Nelson, Jose Vigil and Joan Wheatley of the Western Area Power Administration.
- * Numerous private landowners having land within the ISRMA and other individuals (list available at BLM's Redding office).

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APPENDIX A: WATERSHED ANALYSIS



Appendix A: WATERSHED ANALYSIS

Information within this appendix will help the reader understand the relationship between the ISRMA planning process/document and Watershed Analysis procedures identified by the Federal Ecosystem Management Team (FEMAT). The appendix introduces the reader to FEMAT and Watershed Analysis, describes the relationship of Watershed Analysis to this plan, explains where information in similar Watershed Analysis reports is located within this document, and provides additional analysis where the main body of the ISRMA document is insufficient.

Introduction

In April of 1993, President Clinton commissioned an interagency scientific team to develop a set of alternatives for management of forested ecosystems within the range of the northern spotted owl. This effort culminated in the report by the FEMAT entitled Forest Ecosystem Management: An Ecological, Economic, and Social Assessment in July of 1993. The FEMAT report, also referred to as the Northwest Forest Plan, presented 10 options regarding management of BLM and Forest Service lands within the range of the northern spotted owl.

The FEMAT report was analyzed by a BLM and Forest Service interagency team under NEPA guidelines with option 9 being adopted by those agencies with the signing of the Record of Decision for "Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl" in April of 1994. That decision document immediately modified all BLM and Forest Service planning documents and provided standards and guidelines for managing public resources within the owl's range.

Due to accelerating concerns about declining fish resources, protection and improvement of aquatic and riparian ecosystems are key components of the FEMAT report, which presents a broad strategy for maintaining or restoring the distribution, diversity, and complexity of watershed and landscape-scale processes and characteristics under which aquatic species have evolved. Watershed Analysis is one of four components of an aquatic conservation strategy identified within the FEMAT report.

Watershed Analysis

As the primary tool for generating information to guide and implement ecosystem management as directed in the Northwest Forest Plan, Watershed Analysis is essentially ecosystem analysis at the watershed scale. Watershed Analysis is a systematic procedure to characterize the human, aquatic, riparian and terrestrial features, conditions, processes, and interactions within a watershed. Watershed Analysis focuses on those particular issues that are critical to designing management activities in the watershed. Results from the analysis help guide the type, location, and sequence of appropriate management activities within the watershed.

Watershed Analysis is not a decision process in that it does not produce a formal decision notice or Record of Decision as required by NEPA. Watershed Analysis is an intermediate level of analysis which derives information from larger scale plans and provides information to smaller scale, site analyses, both of which are formal decision points under NEPA.

In January of 1994, BLM and the Forest Service released a guide for conducting Watershed Analysis entitled A Federal Agency Guide for Pilot Watershed Analysis. This Guide explains the necessary steps and expected products of performing the analysis and is available for review at BLM's Redding office. In June of 1994, BLM and the Forest Service released a revised guide for conducting Watershed Analysis entitled FY 1994-96 Watershed Analysis Guidelines. This Guide identifies additional information which should be considered when conducting Watershed Analysis and is also available for review at BLM's Redding office.

The ISRMA Plan and Watershed Analysis

In preparing the ISRMA plan, BLM and cooperating agencies utilized analysis procedures which mirror Watershed Analysis. Information collected prior to the development of alternatives was essential in formulating landscape decisions which spanned several jurisdictions. Yet, unlike Watershed Analysis, the product was a decision document which formalized recommendations generated by the analysis into land-use decisions generated in compliance with NEPA.

Watershed Analysis is not only an information collection process, but also serves as a yardstick to determine whether actions are consistent with objectives of the standards and guidelines identified within FEMAT. In other words, Watershed Analysis not only provides information to develop land-use decisions, but tests those land-use decisions relative to FEMAT guidelines.

BLM and cooperating ISRMA agencies chose not to prepare an entirely new report at this time for Watershed Analysis using a format described within the Guide. Information described within the report would be redundant with information found within Chapter 3 (Affected Environment) and elsewhere. Although a separate report using the format described within the Guide will not be prepared, Appendix A helps the reader identify where information is located in this document that would otherwise be located within a Watershed Analysis report. In cases where information is abbreviated within the main body of the NEPA document, the information is detailed within this Appendix.

Description of the Watershed

The ISRMA encompasses portions of the Clear Creek/Whiskeytown Lake watershed and the Sacramento River/Keswick Lake watershed. Descriptions of the natural and cultural features of the planning area are provided within Chapter 3 (Affected Environment).

Description of Uses, Values and Issues

Land-uses and values are described within Chapter 3 (Affected Environment) and particularly within the sections describing land-use zoning, vegetative resources, soil resources and recreational resources. Issues identified through the planning/analysis effort are identified within Chapter 1 (Introduction) and the procedure used to identify those issues is described within Chapter 5 (Consultation and Coordination).

Desired Conditions

Identifying desired future conditions of the ISRMA is the main feature of Chapter 2 (Alternatives). Each land-use alternative describes a strategy for resolving issues identified within Chapter 1 (Introduction). Each land-use alternative is accompanied by a thematic narrative which describes the types of future conditions that would be maximized through implementation of the alternative. Finally, the Desired Plant Community Map delineates the desired plant communities required to accommodate social, cultural, economic and ecological demands.

Key Questions Addressed Through Analysis

In developing land-use alternatives, the ISRMA planning team used the issues that were identified, and generated key questions to be resolved. The key questions are listed within Chapter 1 (Introduction).

Past and Current Conditions

Current conditions of the ISRMA are identified within Chapter 3 (Affected Environment) and past conditions are highlighted within the section describing cultural resources and soil resources.

Trends and Potential Effects

Disclosing current trends and the potential effects of various land-use alternatives is the main feature of Chapter 4 (Environmental Consequences). Each land-use alternative, including the alternative of no action, generates a mix of ecological, economic and social impacts.

Guidance for Site Analysis and Project Level Planning

The Watershed Analysis Guide characterizes this as the most important section of a Watershed Analysis report. This section utilizes the results of the analysis to identify watershed processes and concerns that will need to be addressed at a project-planning scale. Advice and prescriptions are generally not site specific, but are based on stratifications which can be subwatersheds, management zones, etc.

Within this section, Watershed Analysis reports include the design of riparian reserves, restoration opportunities, transportation planning, monitoring needs, cumulative effects analysis, and general planning recommendations. Each element is described below as it relates to the ISRMA plan. Where the main body of the NEPA document provides abbreviated information, the element is augmented within this appendix.

Riparian Reserves: Riparian reserves as defined in the Record of Decision for the President's Forest Plan, are one of four components of the Aquatic Conservation Strategy. They are land allocations which provide the basis for protecting the health of the aquatic system and its dependent species. The other three components include a system of key watersheds, the process of Watershed Analysis, and watershed restoration. Guidance for Watershed Analysis is specific in the Record of Decision concerning riparian reserves.

"Watershed Analysis will identify critical hillslope, riparian, and channel processes that must be evaluated in order to delineate riparian reserves that assure the protection of riparian and aquatic functions. Riparian reserves are delineated during implementation of site-specific projects based on analysis of the critical hillslopes, riparian, and channel processes and features."

There has been a general expectation among the land managing agencies that Watershed Analysis would provide specific mapping of riparian reserves which modifies the interim reserve widths outlined in the Record of Decision. This may be a reasonable expectation in some watersheds where extensive site-level project work has been undertaken and detailed inventories are available. The approach taken to delineate riparian reserves encompassed by the ISRMA is more consistent with the direction quoted above and does not, at this time, result in an amended riparian reserve map.

Interim riparian reserves within the ISRMA are depicted on the Riparian Reserve Map and are applicable only to current and future BLM and Forest Service lands. The interim riparian reserve widths for BLM and Forest Service lands encompassed by the ISRMA are shown in Table A.1.

Table A.1 BLM and Forest Service Interim Riparian Reserve Widths			
Fish-Bearing Streams	Permanently Flowing Non-Fish Bearing Streams and Wetlands or Reservoirs > 1 acre	Lakes and Natural Ponds	Intermittent Streams and Wetlands < 1 acre
Two site potential trees or 300 feet	One site potential tree or 150 feet	Two site potential trees or 300 feet	One site potential tree or 100 feet
Source: Record of Decision adopting FEMAT, 1994			

FEMAT established Standards and Guidelines for timber management, roads management, grazing management, recreation management, minerals management, fire/fuels management, lands management, general riparian area management, watershed and habitat restoration and fish and wildlife management within BLM and Forest Service riparian reserves. These Standards and Guidelines were used by the planning team in developing land-use management alternatives and are described within Chapter 2 (Alternatives) where desired plant communities are defined.

Restoration opportunities: Restoration opportunities are important to identify with

Watershed Analysis and are critical in formulating restoration plans. Although the soil resources and water quality sections of Chapter 3 (Affected Environment) highlight restoration opportunities, Table A.2 is provided to augment the main body of the NEPA document. Readers should note that the ISRMA plan may not incorporate all recommendations into various alternatives.

Table A.2 Restoration Opportunities		
Restoration Opportunity	Potential Action(s) To Restore The Resource	Agencies Involved
Spring Creek Fishery	Spring Creek is currently sterile from AMD at Stowell Mine downstream to IMM. Treatments could include: 1) continued treatment of the point source, 2) piping contamination from point source to treatment facilities maintained at IMM, 3) riparian vegetation plantings.	CRWQCB, CDF&G, EPA, BR, BLM, USFWS
Flat Creek Fishery	AMD from a Spring Creek diversion currently inhibits full productivity at Flat Creek. Treatments could include: 1) continued treatment of the point source (Stowell Mine), 2) piping contamination from point source to treatment facilities maintained at IMM, 3) riparian vegetation plantings; 4) bank feathering; 5) impoundment removal.	CRWQCB, CDF&G, EPA, BR, BLM, USFWS
Squaw Creek Fishery	South Fork Squaw Creek is sterile from Early Bird Mine downstream to Shasta Lake. Treatments could include: 1) continued treatment of the point source; 2) riparian vegetation plantings.	CRWQCB, CDF&G, EPA USFS, BLM, USFWS
Deer Winter Range	Winter range habitat within the ISRMA is predominated by dense thickets of mature chaparral vegetation containing little nutritional value. Treatments could include: 1) mosaic burning/clearing on 30 year rotational cycle to stimulate ceanothus rather than chamise and manzanita; 2) spring box installation.	BLM, NPS, CDF&G, CDF

Transportation Planning: Transportation planning plays an important role in ecosystem management. Chapter 2 (Alternatives) provides various strategies for managing road and trail systems within the ISRMA. Where Watershed Analysis reports provide recommendations for managing transportation systems, the ISRMA plan provides guidance and direction which was developed using analysis procedures.

Monitoring: Monitoring is fundamental to resolving analytical uncertainties and understanding how management effects ecosystem response. Because Watershed Analysis is an iterative process, monitoring provides a framework to update and revise land-use decisions and the analysis those decisions are based upon. Chapter 4 (Environmental Consequences) highlights the expected impacts of various land-use alternatives and briefly discloses the procedures which would be conducted to monitor those impacts.

Cumulative Effects: Cumulative effects analysis are part of Watershed Analysis and the NEPA process. Cumulative effects of the ISRMA plan are discussed briefly within Chapter 4 (Environmental Consequences). Readers should also note that BLM's Redding

Resource Management Plan, which formulated the ISRMA, provides additional discussion of cumulative impacts.

General Planning Information: Planning information found within Watershed Analysis reports, summarizes the relative impacts of various types of land disturbance in different stratification units in the watershed. This information is located within Chapter 4 (Environmental Consequences) within the ISRMA plan.

Disclosures Suggested In Revised Guide

The FY 1994-96 Watershed Analysis Guide describes additional analysis which should be conducted within Watershed Analysis related to the Clean Water Act and the Endangered Species Act. Topics related to the Clean Water Act include water quality standards, beneficial water uses, water processes of interest, disturbance activities, and restoration opportunities. Topics related to the Endangered Species Act include the northern spotted owl, bald eagle, amphibians, peregrine falcon, gray wolf, grizzly bear, and marbled murrelet.

Water Quality Standards: Water quality is briefly described within Chapter 3 (Affected Environment) within sections describing surface hydrology, acid mine drainage, soil resources, and recreational resources.

Beneficial Water Uses: Water uses are described within Chapter 3 (Affected Environment) within sections describing surface hydrology, acid mine drainage, and recreational resources.

Water Processes of Interest: Water processes of interest are briefly referred to within Chapter 3 (Affected Environment) within the surface hydrology section.

Disturbance Activities: Disturbance activities are discussed within Chapter 3 (Affected Environment) within the soil resources, acid mine drainage and surface hydrology sections and Chapter 4 (Environmental Consequences).

Northern Spotted Owl: Although Chapter 3 (Affected Environment) briefly discusses northern spotted owls (NSO), the following questions are answered to augment the main text of the NEPA document.

Are northern spotted owl activity centers located within the watershed (ISRMA)? The ISRMA does not encompass lands occupied by the NSO. Although the entire planning area has not been surveyed to protocol, most lands containing habitat have been evaluated by public or private landowners.

What FEMAT land allocations are present within the ISRMA? BLM and Forest Service lands within the ISRMA are classified as Administratively Withdrawn Areas, Riparian Reserves and Matrix under FEMAT.

How many acres of nesting, roosting and foraging (NRF) habitat are there within the ISRMA? The ISRMA contains approximately 7,500 acres of habitat that could be used by the NSO for nesting, roosting or foraging purposes. These habitat components are located within the Bear Creek, Big Gulch, East Fork Clear Creek, and Cedar Gulch subwatersheds. Of this 7,500 acres, 3,380 acres are suitable for foraging purposes only, 3,830 acres are suitable for both roosting and foraging, and 290 acres are suitable for both nesting and roosting.

How much dispersal habitat (11/40 and above) is within the ISRMA? Approximately 15,950 acres of the ISRMA meet dispersal requirements based upon the 11/40 rule. This "11/40 and above" habitat is located within the Bear Creek, Big Gulch, East Fork Clear Creek, and Cedar Gulch subwatersheds.

Is there a late successional reserve (LSR) within the ISRMA? The ISRMA does not encompass a LSR. The nearest LSR is located 2 miles from the northern boundary (Bear Creek watershed) and 5 miles from the western boundary (Clear Creek) of the ISRMA.

How much critical habitat has been designated within the ISRMA? The ISRMA does not contain any land designated as critical habitat for the NSO.

Bald Eagle: Although Chapter 3 (Affected Environment) briefly discusses bald eagles, the following questions are answered to augment the main body of the text.

Are occupied bald eagle activity areas located within the ISRMA? The ISRMA does contain bald eagle activity centers.

What ROD land allocations are the bald eagle activity areas located in? Bald eagle activity areas are located on Forest Service lands within Matrix, Administratively Withdrawn Areas and Riparian Reserves.

Has a site specific-management plan been developed for each bald eagle activity area? The Shasta/Trinity National Forest has prepared management plans for the 18 eagle nesting territories located on Forest Service lands surrounding Shasta Lake, including the nesting territory located within the ISRMA.

Are other bald eagles expected to be present within the ISRMA? Comprehensive surveys for bald eagles have not been conducted throughout the entire ISRMA. Additional bald eagles may be present, especially near Clear Creek at the western edge of the ISRMA.

What is the relationship of the ISRMA as it relates to the Bald Eagle Recovery Plan? Eagle pairs on Forest Service lands are protected by 1/4 mile and 1/2 mile habitat and noise buffers. The Forest Service Bald Eagle Management Plan ties directly to the 1986 Bald Eagle Recovery Plan and, if protected per the Recovery Plan, should partially fulfill overall recovery goals.

Is there any significant bald eagle habitat which is not in Federal ownership? There does not appear to be any significant bald eagle habitat located on private land within the ISRMA.

Amphibians: Amphibians present or suspected within the ISRMA are described in Chapter 3 (Affected Environment) within the wildlife resources and special status wildlife species sections.

Peregrine Falcons: Peregrine falcons are not described within the NEPA document because there have been none identified, nor is habitat suspected within the ISRMA.

Gray Wolves: Gray wolves are not described within the NEPA document because there have been none identified, nor is habitat suspected within the ISRMA.

Grizzly Bear: Grizzly bears are not described within the NEPA document because there have been none identified, nor is habitat suspected within the ISRMA.

Marbled Murrelet: Marbled murrelet are not described within the NEPA document because there have been none identified, nor is habitat suspected within the ISRMA.

Consistency With FEMAT

As mentioned previously, Watershed Analysis not only provides information to help formulate land-use decisions, but tests those decisions relative to FEMAT guidelines. The ISRMA plan contains elements adopted from FEMAT to ensure the protection of riparian reserves and incorporates other management plans (eg. Bald Eagle Management Plans) that protect habitat for various wildlife species. Overall, the ISRMA plan embraces the concept of ecosystem management and conforms very well with FEMAT guidelines. Due to the programmatic nature of this plan, however, site specific project plans and accompanying watershed analysis reports are more appropriate to assess most management actions identified within this plan.

APPENDIX B: RECREATION OPPORTUNITY SPECTRUM



Appendix B: RECREATION OPPORTUNITY SPECTRUM

While the goal of the recreationist is to obtain satisfying experiences, the goal of the recreation manager becomes one of providing the opportunities for obtaining these experiences. By managing the natural resource settings, and the activities which can occur within it, the manager is providing the opportunities for recreation experiences to take place. Therefore, for both the manager and the recreationist, recreation opportunities can be expressed in terms of three principal components: the activities, the setting, and the experience.

The Recreation Opportunity Spectrum is one method for defining the types of outdoor recreation opportunities the public might desire, and identifying that portion of the spectrum the land manager might provide. Although the Forest Service and BLM utilize the Recreation Opportunity Spectrum in formulating recreation plans, the Bureau of Reclamation and National Park Service utilize somewhat different systems.

In developing the ISRMA plan, it became apparent that a common language was needed by Federal land managers to describe recreation management decisions. The common language used was not the Recreation Opportunity Spectrum system, but a layperson description of the types of recreation opportunities being offered under each alternative.

These layperson descriptions are found within Chapter 2 (Alternatives) where recreation management is described.

Appendix B provides an interpretation of those recreation descriptions using the Recreation Opportunity Spectrum classification system. Tables B.1, B.2, B.3 and B.4 provide an interpretation of each land-use alternative using the Recreation Opportunity Spectrum and references the areas numbered within the text and shown on the maps. Readers interested in the Recreation Opportunity Spectrum are invited to review the Recreation Opportunity Spectrum Handbook available at BLM's Redding office.

Table B.2
Recreation Opportunity Spectrum Classes
under
ALTERNATIVE A

Area	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Sacramento River Greenway						
1		X		X		
2					X	X
3		X				
4					X	
5				X		
6					X	
Chappie-Shasta OHV Management Area						
1		X	X			
2					X	
3						X
4					X	
5				X		
6			X			
7		X				
8			X	X	X	X
9		X				
10			X			
11			X			
12			X			
13			X			
14						X
15				X		
16			X			
17			X			
18			X			
19			X			
20			X	X	X	
Clear Creek Greenway						
1			X			
2		X				
Iron Mountain Area						
1	N/A	N/A	N/A	N/A	N/A	N/A

Table B.3
Recreation Opportunity Spectrum Classes
under
ALTERNATIVE B

Area	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Sacramento River Greenway						
1			X			
2				X		
3		X				
4		X				
5		X				
6					X	
7					X	
8				X		
9		X				
10		X				
11		X		X	X	X
12				X		
Chappie-Shasta OHV Management Area						
1				X		
2			X			
3			X	X	X	X
4			X			
5			X			
6			X			
Clear Creek Greenway						
1		X				
2		X				
3		X				
4		X				
5			X			
6				X		
7			X			
8			X	X	X	
Iron Mountain Area						
1	N/A	N/A	N/A	N/A	N/A	N/A

Table B.1
Recreation Opportunity Spectrum Classes
under
ALTERNATIVE C

Area	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Sacramento River Greenway						
1		X	X			
2				X		
3		X		X		
4		X		X		
5		X				
6					X	
7					X	
8				X		
9		X				
10		X			X	
11					X	X
Chappie-Shasta OHV Management Area						
1				X		
2			X			
3			X	X	X	X
4			X			
5			X			
Clear Creek Greenway						
1		X	X			
2		X				
3		X				
4			X			
5			X			
6			X			
7			X	X	X	
Iron Mountain Area						
1	N/A	N/A	N/A	N/A	N/A	N/A

Table B.4
Recreation Opportunity Spectrum Classes
under
ALTERNATIVE D

Area	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Sacramento River Greenway						
1			X			
2				X		
3				X		
4		X				
5		X		X	X	X
6					X	
7		X				
8				X		
9					X	
10		X				
11					X	
12		X				
13		X		X		
Chappie-Shasta OHV Management Area						
1				X		
2				X		
3			X	X	X	X
4			X			
5			X			
6				X		
7		X				
8		X				
9				X		
10		X				
11				X		
Clear Creek Greenway						
1		X				
2		X				
3		X				
4				X		
5				X		
Iron Mountain Area						
1	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX C: ACCESS AND STAGING AREAS



Appendix C: ACCESS AND STAGING AREAS

Information within this appendix will help the reader understand the interagency planning teams assessment of access needs into the ISRMA, and the rationale for identifying some locations as trailheads or staging area sites. The appendix introduces the reader to staging areas and trailheads, explains the need to provide convenient and improved access into the ISRMA, describes the access sites considered for development, and provides rationale for the access sites identified for development.

What is a staging area?

A staging area is a developed site that provides access to popular attractions such as trails, swimming holes, and fishing spots. Staging areas come in different shapes and sizes with many containing parking spaces, restrooms, garbage cans, drinking water, informational kiosks, and directional signs. Some staging areas may contain specialized features such as loading and unloading ramps for off-highway motor vehicles, corrals or hitching posts for horses, open areas for inflating rafts, or launching ramps for hang gliders and paragliders. Overall, the staging area provides convenient access to a recreational resource and emphasizes visitor comfort.

What is a trailhead?

A trailhead is a developed site that provides access to one or more trails. Trailheads are normally small, may have a few places to park, and provide directional signs to the available trails. Although most trailheads do not have specialized features, some may have primitive facilities for trail users. Overall, the trailhead provides identifiable access onto a trail system, but does not emphasize visitor comfort.

Why are staging areas and trailheads important for the ISRMA?

The ISRMA can be accessed by numerous roads and trails that connect with Federal, state and county roadways at the margin. Some of these roads and trails provide motor vehicle access, others provide non-motorized vehicle access only. Some of the access points are desirable and distribute visitors throughout the ISRMA in a logical manner, others should be closed or deemphasized because they contribute to unacceptable traffic levels or do not distribute visitors in a desirable manner. One reason that staging areas or trailheads are important is because they can improve access opportunities to desirable locations, and draw visitors away from undesirable locations.

Another reason that staging areas or trailheads are important is that they can improve visitor safety and convenience. Visitors that are unfamiliar with an area can easily get lost, or trespass on private land unless access routes are properly delineated and managed. Staging areas or trailheads are developed to minimize this confusion, and often provide information about where certain visitors can and can't go, and what dangers they may encounter.

Staging areas or trailheads can provide safe and secure locations to park vehicles at

while visitors venture away from their primary mode of transportation. Staging areas that are staffed with an attendant are normally very secure places to leave a vehicle at, trailheads or staging areas that are periodically patrolled by rangers are less secure places to leave vehicles at, and undeveloped or unknown access points can be very unsafe places to leave vehicles at. Managers can provide better overall access into an area if the access points emphasized are safe and secure.

Finally, staging areas that are staffed with attendants or patrolled regularly by rangers can reduce illegal activities or equipment within certain problem areas. Illegal activities such as garbage dumping and drug cultivation can be reduced when the access route(s) into those problem areas are brought under management with staffed staging area(s) or patrolled trailhead(s). Illegal equipment, such as inadequate or missing spark arresters and mufflers on motorcycles, can also be reduced when the access routes into those problem areas are brought under management with a staffed staging area or patrolled trailhead.

Evaluation of Potential Western and Southern Access Sites

The western and southern access points evaluated for potential trailhead or staging area development are described below and shown on Map C.1:

Site 1 (Upper Clear Creek): This road crosses private land and continues eastward towards road systems within the Big Gulch area. The segment of road above (to the east) of the private property will be closed under all alternatives in the ISRMA plan to reduce private property trespass. This road would not be a good access point into the ISRMA because of this closure, and also because it would cause increased traffic flow through French Gulch if developed.

Site 2 (East Fork Clear Creek): This county road parallels the East Fork of Clear Creek and continues eastward towards road systems in the Big Gulch area and east of Shirttail Peak. This county road will continue to serve private landowners, fishermen, miners, timber haulers and hunters, but is not a good access road to emphasize to visitors because it could cause increased traffic flows through French Gulch and along East Fork Road.

Site 3 (Cline Gulch Road): This county road parallels Cline Gulch Road and continues northward to Shirttail Peak. This county road will continue to serve private landowners, fishermen, miners, timber haulers and hunters, but is not a good access road to emphasize to visitors because it could cause increased traffic flows through French Gulch and along Cline Gulch Road.

Site 4 (Coggins Mill Site): This flat adjacent to Trinity Mountain Road could provide improved access to Clear Creek for fishermen, and access to current road and trail systems located to the east of Clear Creek if a bridge was developed and road built. This site is not identified for staging area or trailhead development under any alternative of the

ISRMA plan because it would require expensive road and trail building. Although some individuals on BLM's citizen advisory panel thought that this site might serve well as an equestrian trailhead, nothing is proposed at this time.

Site 5 (Merry Mountain Site): This site has a road and bridge that crosses Clear Creek and continues eastward to one road system that is closed to motor vehicle travel, and one road system that is available for motor vehicle travel. A small flat located east of Clear Creek would be ideal for the development of a day-use area and/or multiple-use staging area.

This site is identified within the ISRMA plan under the No Action Alternative for no development, although the road that continues northward towards Merry Mountain would continue to be available for motor vehicles registered for highway use only. Under Alternative A and Alternative B, this site would be identified for potential development of a multiple-use staging area that would feature motor vehicle access for all registered motor vehicles into the Chappie-Shasta OHV Area, and access to new and existing non-motorized trails. Under Alternative C, this site is identified for potential development of a staging area that would provide access to non-motorized trails only. Under the Alternative D, this site is identified for potential development of a multiple-use day-use area that would feature access for motor vehicles registered for highway use only over the existing road that continues northward towards Merry Mountain, and access to new and existing non-motorized trails.

Site 6 (Crawford Mill Site): This flat north of Highway 299 is located east of Site 5 and ties into the same road systems described for that site. This site is small and adjacent to a wetland. Although this site would provide convenient access to many of the same opportunities identified for Site 5, it has poor visual screening from Highway 299 and is too small for adequate development. This site is not identified for development under any alternative within the ISRMA plan.

Site 7 (Power Line Loop Site): This flat north of Highway 299 ties into Merry Mountain Road and has poor visual screening from Highway 299. Merry Mountain Road will continue to serve some visitors and private landowners north of the Whiskeytown Unit, but is not good to emphasize for heavy use because of poor encroachment onto Highway 299.

Site 8 (Grizzly Gulch Road): This county road north of Highway 299 continues northward towards the Bright Star Mine and ties into existing roads and trails on the Whiskeytown Unit that are closed to motor vehicle travel. This road will continue to serve some visitors and private landowners north of the Whiskeytown Unit, and may be designated as a trailhead.

Site 9 (Tunnel Site): This site is located approximately 1/4 mile east of Oak Bottom Marina and loops underneath a tunnel to a small flat. This flat and road provides

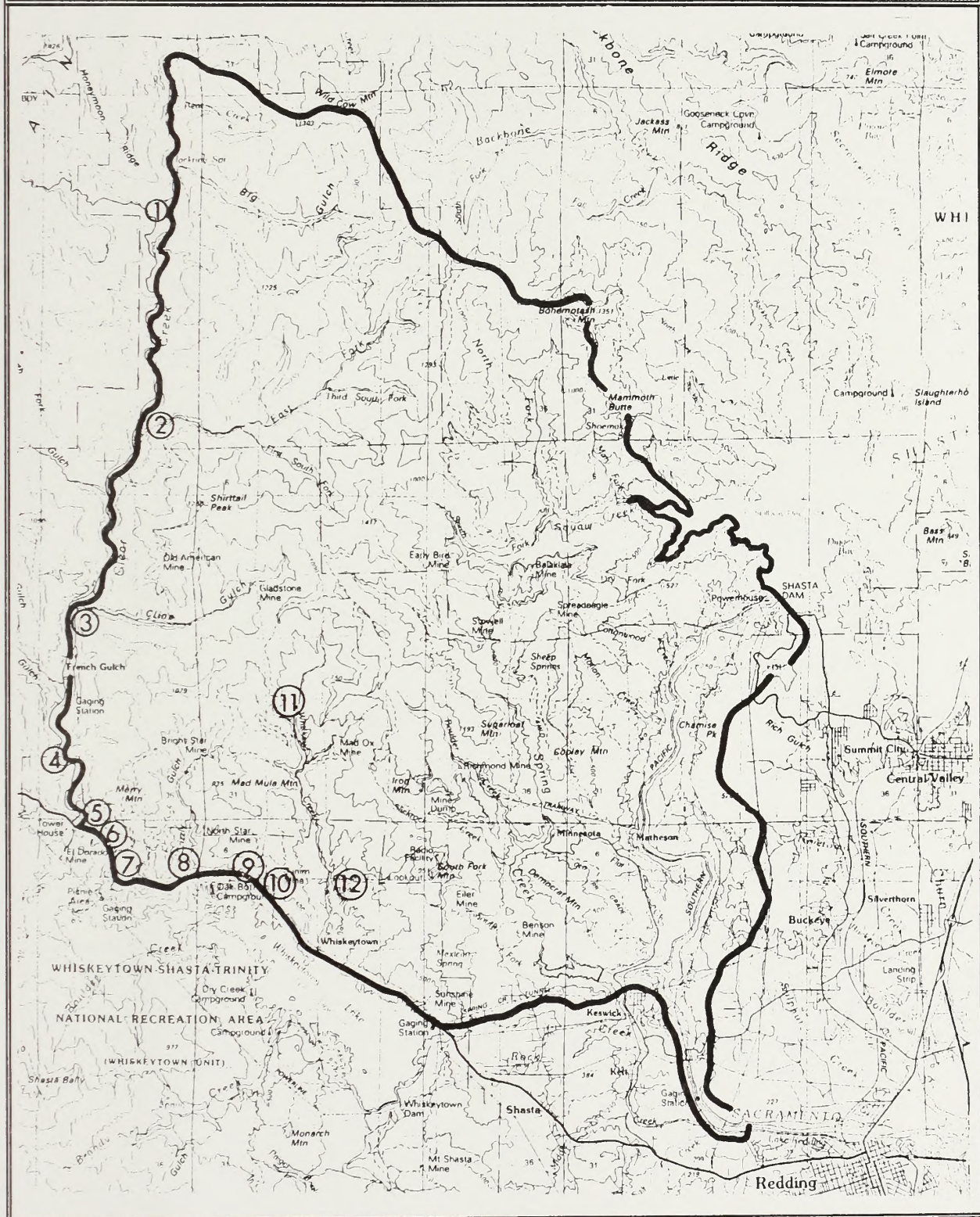
opportunity for access to non-motorized trails, but would require considerable clearing and reshaping before it could accommodate a large number of people. This site and road may continue to serve existing water and trail users, but is not identified as a trailhead or staging area under any alternative.

Site 10 (New York Gulch): This site is north of Highway 299 across from the truck scales and serves a trail that crosses Mad Mule Mountain and the Bright Star Mine. This site could provide motor vehicle access into the trail systems within the Chappie-Shasta OHV Management Area if private land was acquired and the existing road was rerouted and improved. Although this site is identified for potential development of a small staging area or trailhead under all alternatives within the ISRMA plan, poor encroachment and visual screening from Highway 299 would preclude it from large scale development.

Site 11 (End of Whiskey Creek Road): This site is located on private land located at the end of Whiskey Creek Road and could only be developed if the private land was acquired. The site serves a large road and trail network (also on private land) that loops around Whiskey Creek Basin and ties into other trail systems to the north and east. If this land was ever acquired, this would be an ideal place to develop a multiple-use staging area that would serve trail users into the Chappie-Shasta OHV Management Area and visitors to Whiskey Creek. This site could also provide a convenient landing spot for hanggliders or paragliders if additional launching sites were available on the northern portion of Whiskey Creek Basin. This site is identified under all alternatives within the ISRMA plan for development of a staging area.

Site 12 (Whiskeytown Group Area): This site currently serves as a staging area for visitors to the Whiskey Creek arm of the reservoir. The site does not provide good access into the upper reaches of the ISRMA and is not considered for additional development within the ISRMA plan.

Map C.1
Western and Southern Sites Evaluated For Access



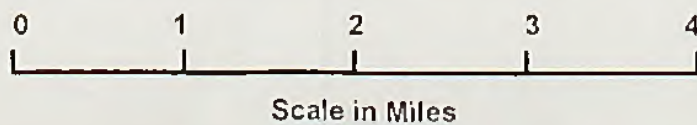
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Map Packet One

No Action Alternative
&
Interim Riparian Reserves

Desired Plant Community
&
Inventory of Visual Quality Objectives



LEGEND

- Width equals two site potential trees or 300 feet
- Width equals one site potential tree or 150 feet
- Width equals one site potential tree or 100 feet



Coordinated Resource Management Planning Effort



Interim Riparian Reserves

DRAFT

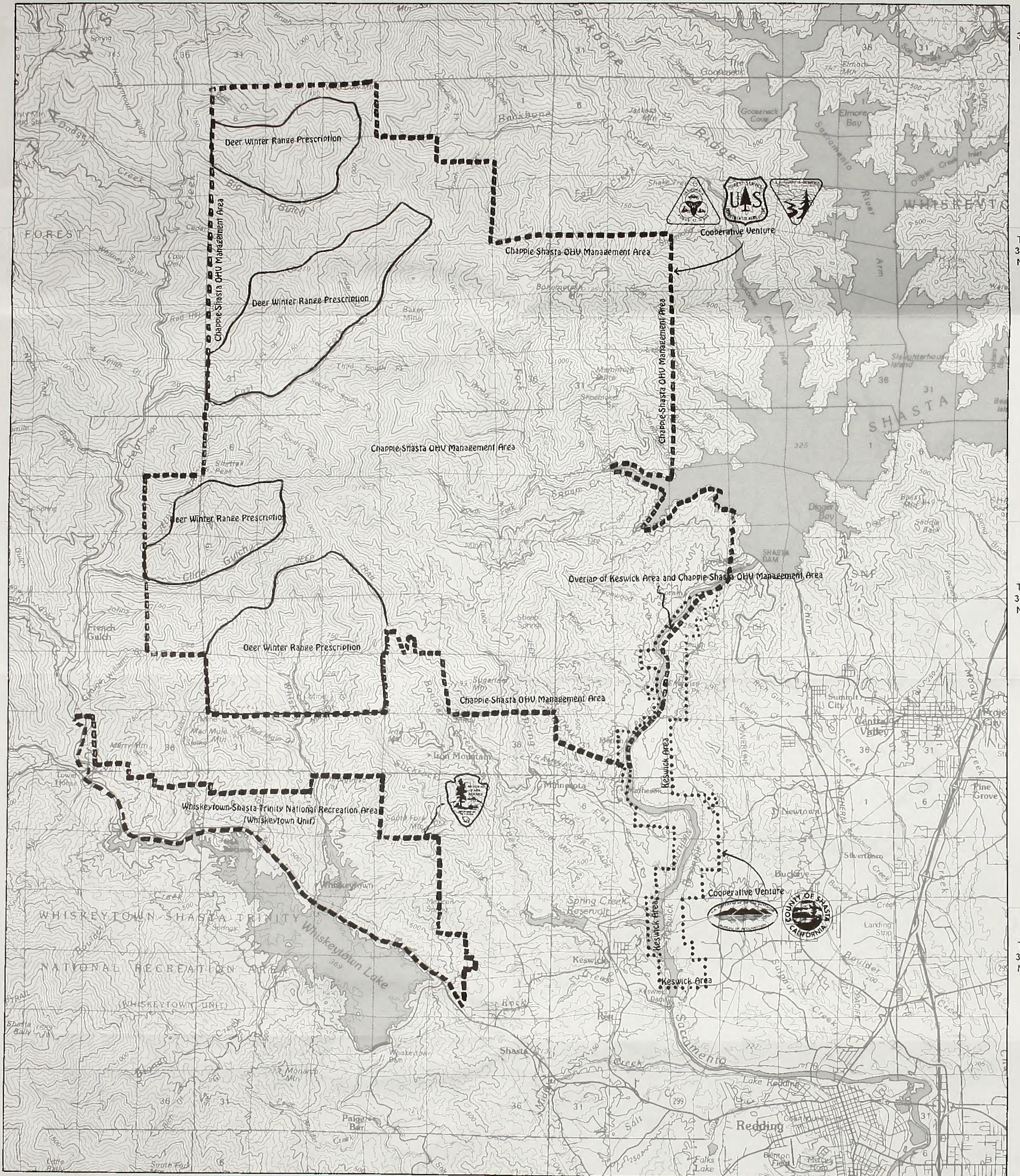
Interlakes Special Recreation Management Area

Activity Plan

Redding Resource Area, California

Note: Land-use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.





LEGEND



Management area boundaries for the Chappie Shasta OHV Area and the Whiskeytown Unit



Management area boundary for the Keswick Area managed by Shasta County for the Bureau of Reclamation

0 1 2 3 4

Scale in Miles



Coordinated Resource Management Planning Effort



DRAFT

Interlakes Special Recreation Management Area

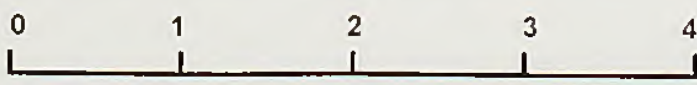
Activity Plan

Redding Resource Area, California

Note: Land use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.

No Action Alternative

North



Scale in Miles

- LEGEND**
- 1 = DPC 1 - Late successional, mixed conifer forest community
 - 2 = DPC 2 - Early successional, mixed conifer forest community
 - 3 = DPC 3 - Mixed conifer/hardwood forest community
 - 4 = DPC 4 - Mixed hardwood and multi-seral brush community
 - 5 = DPC 5 - Closed cone conifer and multi-seral brush community
 - 6 = DPC 6 - Mixed chaparral community



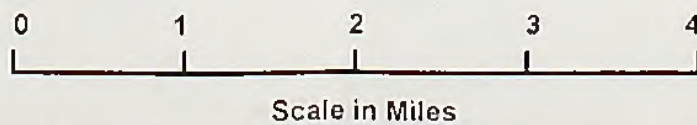
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Desired Plant Community

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Activity Plan
Redding Resource Area, California

Note: Land-use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.



LEGEND

R/VRM I = Retention of Visual Quality

PR/VRM II = Partial Retention of Visual Quality

M/VRM III = Modification of Visual Quality acceptable

MM/VRM IV = Maximum Modification of Visual Quality acceptable



Coordinated Resource Management Planning Effort



*Inventory of
Visual Quality Objectives*

DRAFT

**Interlakes Special Recreation
Management Area**

Activity Plan

Redding Resource Area, California

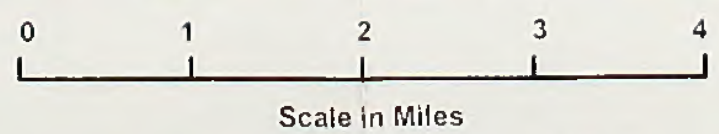
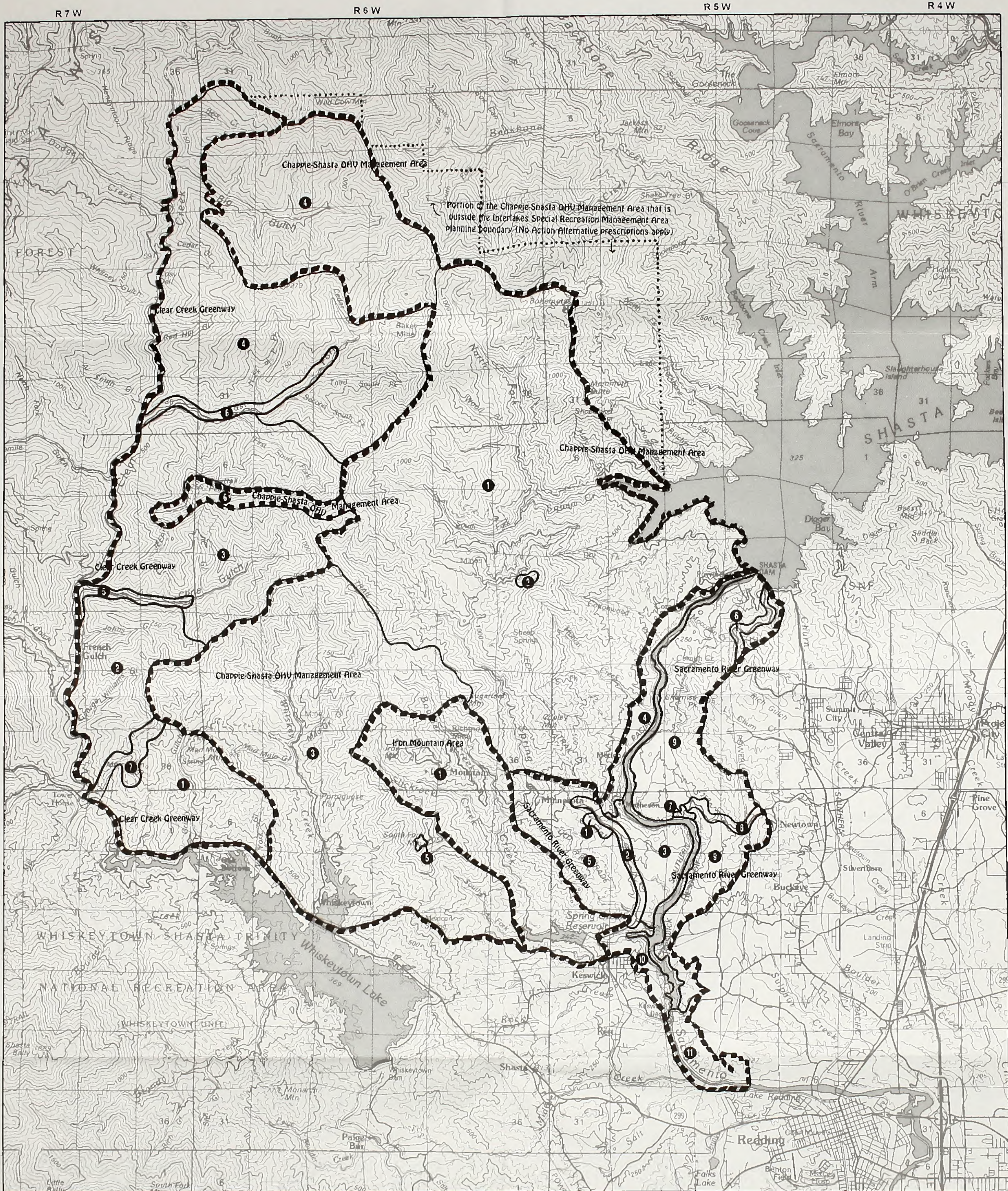
Note: Land-use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.



Map Packet Two

Alternative A
&
Alternative B

Alternative C
&
Alternative D (preferred alternative)



LEGEND

- Management unit boundary (e.g. Chappie-Shasta OHV Area)
- Sub-unit boundary
- Prescription number for each sub-unit (see text)



Coordinated Resource Management Planning Effort



DRAFT

Interlakes Special Recreation Management Area

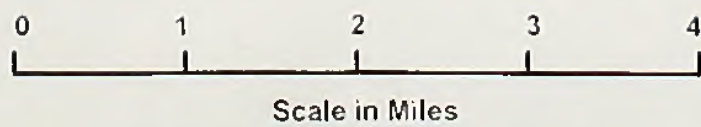
Activity Plan

Redding Resource Area, California

Note: Land-use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.

Alternative C





LEGEND

- Management unit boundary (e.g. Chappie-Shasta OHV Area)
- Sub-unit boundary
- Prescription number for each sub-unit (see text)



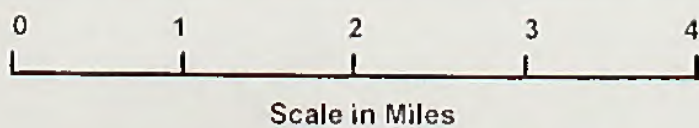
Coordinated Resource Management Planning Effort



Alternative D
(preferred alternative)

DRAFT
Interlakes Special Recreation Management Area
Activity Plan
Redding Resource Area, California

Note: Land use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.



LEGEND

- Management unit boundary (e.g. Chappie-Shasta OHV Area)
- Sub-unit boundary
- Prescription number for each sub-unit (see text)



Coordinated Resource Management Planning Effort



DRAFT

Interlakes Special Recreation Management Area

Activity Plan

Redding Resource Area, California

Note: Land-use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.

Alternative B



LEGEND

- Management unit boundary (e.g. Chappie-Shasta OHV Area)
- Sub-unit boundary
- Prescription number for each sub-unit (see text)



Coordinated Resource Management Planning Effort



Alternative A

DRAFT

Interlakes Special Recreation Management Area

Activity Plan
Redding Resource Area, California

Note: Land-use allocations are shown on private land only to inform the reader how BLM and cooperators would manage that land if it was acquired by purchase or exchange from a willing seller.

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